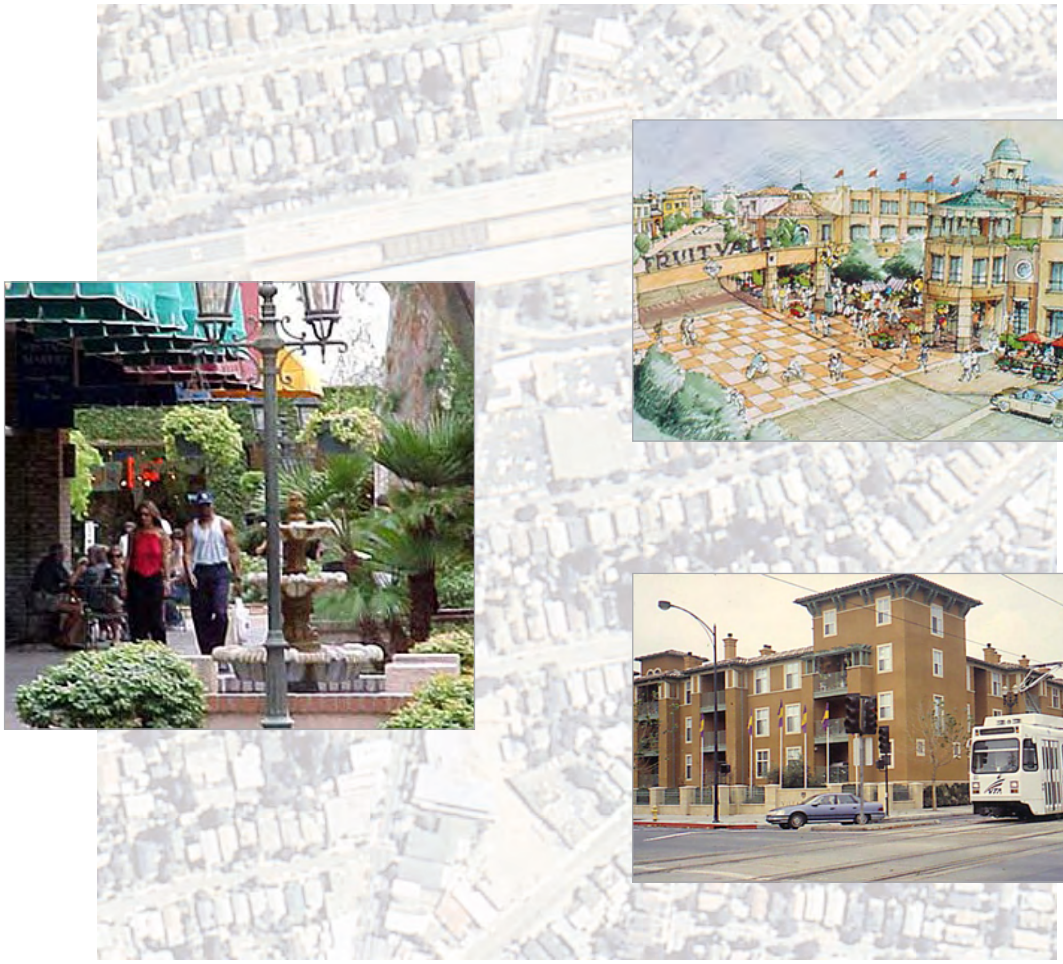

Model Transit-Oriented District Overlay Zoning Ordinance

Prepared for

Valley Connections

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I. Introduction

1. Why Transit-oriented Development?

Communities within the Valley of the Sun are actively planning and engineering a light rail system that will connect the cities of Phoenix, Tempe, and Mesa – the Central Phoenix/East Valley (CP/EV) light rail corridor. It is only sensible to link land use planning policies and programs, and other transportation investment with this major undertaking. Naturally, Transit-Oriented Development is a fitting approach to planning for areas surrounding the stations. Transit-Oriented Development (TOD) brings several benefits that would otherwise be lost with conventional planning. TODs can support increased transit ridership, help relieve congestion and contribute to improving air quality. TODs can also create a sense of place by providing a focus for the community and offering residents a wide range of centrally located services.[A]

Transit-Oriented Development is not a new concept. Since the days of the streetcar, and earlier when the railroad was a dominant transportation system, land use and transit have been formally linked as two of the most basic components of development. Although this continues to be the case, planning for transit has taken a back seat to highway and roadway planning. Development patterns have followed this lead and the single-use roadway has begotten a segregated, single-use land use pattern. TODs are important to transit, as its users are pedestrians rather than drivers. Transit-Oriented Development brings back the human aspect of community. It restores the detail that makes places interesting to the passerby, the lingerer, and the stroller.

TODs focus the community around the transit station making it a center of activity. Within a TOD, particularly around the station, uses are developed in a compact configuration to allow for more variety. Variety and interest make walking more comfortable and perceived distances shorter for pedestrians. Different uses, storefront windows, architectural detail, and street amenities create diversity in activities, sights, and possibilities. Auto-oriented amenities such as parking, driveways, and large-scale signage are restrained, allowing the car to function within the district, but not overwhelm it. Parking lots are moved to the rear of the lot to avoid interrupting the street frontage. Driveways are aggregated and placed away from heavily traveled pedestrian streets and the station area to not interrupt sidewalks and create too many conflicts with pedestrians. Retail and services catering to pedestrians are encouraged at street-level to create an active streetscape. Street amenities such as continuous sidewalks, lower-scale lighting, seating and dining areas, waste receptacles, planters, and trees make the sidewalk environment more comfortable for users giving them a sense that they belong on the street.

In order for TODs to be successful, both private and public interests must create a supportive environment. This cannot be emphasized enough, as many of the development and financing

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[A] These and other benefits are discussed in the first chapter of this document. For further information the reader is also directed to the bibliography provided at the end of the document.

mechanisms and attitudes that prevail today are based on the auto-oriented, single-use model rather than the TOD. Both public and private systems must, therefore, be rethought in order to create successful TOD. The Transit-Oriented District Overlay Zoning Ordinance is one mechanism for achieving successful TOD development.

2. Purpose of this Document

This model overlay ordinance has been developed to assist jurisdictions, particularly Phoenix, Tempe, and Mesa, in creating their own TOD ordinance. The full document contains various accompanying sections to the model overlay ordinance that provide further guidance and in-depth discussions of the issues associated with TODs. These are provided to assist jurisdictions in understanding the complexities of TODs when adapting the model overlay ordinance to their own unique requirements. This document is organized as follows:

- **I. Introduction:** An introduction to TODs, their benefits and the obstacles that may arise in their development.
- **II. Benefits of Transit-Oriented Development:** The benefits section, critically reviews the public and private benefits that will or may result from the implementation of TODs.
- **III. Case Studies:** Case studies have been assembled to highlight efforts in other communities that may serve as examples for future efforts in the Valley communities.
- **IV. Model Transit-Oriented District Overly Zoning Ordinance:** Valley jurisdictions can use this model ordinance as a guide for creating a TOD overlay ordinance that suits their particular needs.
- **V. Discussion of TOD Decision Points:** Throughout the Model Ordinance, "endnotes" are provided, which link to a discussion of TOD decision points in this section of the document. The discussion section offers advice on the various issues that need to be considered when drafting the actual ordinance. Recommendations and guidance are provided to help jurisdictions determine the specific numbers and language that meet their needs and conditions.
- **VI. Design Standards and Guidelines:** This section gives the Valley communities a base upon which to develop their own individual Standards and Guidelines for TODs or to expand existing ones. As station areas become more defined, jurisdictions can utilize the Discussion of TOD Decision Points to aid them in developing their Standards and Guidelines.
- **VII. Bibliography:** A listing of sources for additional information regarding Transit-Oriented Development.

II. Benefits of Transit-Oriented Development

1. Introduction

Proponents of Transit-Oriented Development (TOD) argue that more compact, transit- and pedestrian-supportive development can have an effect on various aspects of our social, economic, and physical environment. TODs can play an important part in alleviating traffic congestion by supporting alternative modes of transportation and reducing the dependence on the automobile and fossil fuels. In turn, this can reduce air pollution caused by congestion and auto dependence. TODs can also be used as a mechanism to revitalize neighborhoods and provide affordable housing. By redirecting growth to support existing communities, TODs may help to decrease the incidence of crime by improving the overall "livability" of communities. Small lots, walkable and active streets, and nearby services and amenities are just some of the few components that support these claims.

Quality Of Life often serves as an umbrella term for these benefits. Frequently, the argument for a better quality of life is used in conjunction with the growing concern that Americans are spending more time on the road than in their homes. Commute times in many major cities have lengthened and studies estimate that nationwide highway congestion is costing approximately $73 billion dollars per year or 2 % of the 1990 GNP.[A] A recent study completed by the Surface Transportation Policy Project (STPP) finds that Americans spend between 14 and 22 % of household income on transportation.[B] Of this amount, 98 % is for the purchase, operation, and maintenance of automobiles.

The general public is becoming increasingly cognizant of the interconnections between land use and transportation patterns and the associated social costs and benefits encapsulated in "quality of life" or "livability." Often such sentiments stem from their experience with increasing traffic congestion, the isolation felt in many suburban communities, and the greater awareness of the effects of suburban growth on the decline of inner city neighborhoods. Transit-Oriented Development has proven itself to be a possible solution to these concerns.

The benefits of Transit-Oriented Development can be principally organized into public (generally non-exclusive) benefits--such as air quality, and private benefits--such as increased property values or sales revenue from foot traffic. The public and private realms often operate independently, resulting in disconnected decisions and places. Making the interconnections between public and private entities and acknowledging this fundamental synergy facilitates the

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[A] Michael Bernick and Robert Cervero, *Transit Villages in the 21st Century* (New York: McGraw Hill, 1997) 43.

[B] Surface Transportation Policy Project, "Driven to Spend: How Sprawl and the Lack of Transportation Choice Are Driving Up Family Transportation Costs," in *Progress*, 11:1 (2001).

success of TODs. They depend as much upon an understanding of the land use and transportation context as they do upon sound market analysis. Improvements in the public realm e.g., infrastructure investments or development incentives can foster revitalization in the private realm. In turn, improvements in the private realm will generally yield public returns e.g., visual interest at the street level or increased tax revenues.

Public and private benefits can be further organized into "primary" and "collateral" benefits. Primary benefits include those for which a primary cause and effect relationship can be documented such as increased transit ridership. Collateral benefits are associated benefits of TOD, but are not as easily quantifiable such as improved community health.[C]

The following matrix presents one way of structuring thoughts about the benefits of Transit-Oriented Development. The lines, however, are not black and white, and the overwhelming truth is that these benefits overlap and support each other. Significant benefits (highlighted in **bold**) are discussed in greater detail in the following pages.

[C] The Center for Disease Control is currently funding research in this area to determine if there is a corollary between the level of sprawl in a region and the health of its population.

Table 1: Benefits of Transit-Oriented Development

	Public	Private
Primary	▪ **TODs can help revitalize declining neighborhoods and urban centers;** ▪ **Increased opportunities for affordable housing;** ▪ Increased transit ridership; ▪ Decreased roadway congestion; ▪ Improved accessibility to jobs; ▪ Improved air and water quality; ▪ **TODs can serve as a revenue source for transit agencies;** ▪ **Mixed-use TOD can generate strong sales tax revenues; and,** ▪ **Transit investment in general brings positive local and regional impact**	▪ **TODs can provide affordable housing near a readily available source of transportation, creating a high-level of mobility for households on limited incomes**; ▪ Increased property values; ▪ Improved foot traffic for retailers; ▪ Decrease in transportation costs for residents and workers; ▪ Decreased employee travel costs; and ▪ Access to a more diverse workforce.
Collateral	▪ Improved community health; ▪ Increased property and sales tax revenues; ▪ Reduced crime; ▪ Less time in cars means more time for work and play; ▪ Decreased expenditures on roadway expansion; and, ▪ Preservation of open space.	▪ Co-location of services and uses increases sales and productivity; ▪ Improvements for pedestrians and transit riders do not come at the expense of automobile access; ▪ Co-location of employment with other uses (such as daycare) increases the attractiveness of workplace to prospective employees; ▪ Public co-investment in TODs supports new development; and, ▪ **Mixed-use TODs can deliver more highly-valued development.**

The projects highlighted below have used Transit-Oriented Development to improve quality of life within their communities. In addition, the case studies which appear in *Chapter III. Case Studies*, document benefits and the experiences of designing and implementing TOD policies and developments in areas of the U.S. with similarities to locations in the Valley Region.

The definition of Transit-Oriented Development varies from community to community. For the purposes of this document, Transit-Oriented Development must include the following:

- ❖ Walkable access within about 2,000 feet to a transit station or stop which is safe, visible, accessible, and provides a visual connection to the uses which surround it and a good level of transit service;
- ❖ A walkable and human-scaled environment;
- ❖ A mix of compatible and complementary land uses within about 2,000 feet of transit;

- ❖ A fine-grained and interconnected street system which encourages transit use, walking, and bicycling; and,

- ❖ A level of development (residents, workers, and attractions) which will be supportive of transit ridership.

It should be noted that in the time span of urban growth in the United States, the modern concept of Transit-Oriented Development is still very much in the adolescent stages.[D] Although many communities have adopted TOD supportive policies and legislation, and many more have existing light rail service with plans for expansion, the supportive land use portion remains absent from many transit stations. Successful Transit-Oriented Development, though not a new concept, has run into various obstacles and, in its most pure form, has been implemented only in a limited number of cases. Studies of built TODs are largely restricted to only a few major metropolitan areas. These include: the San Francisco Bay Area, the Los Angeles and San Diego metropolitan areas, and the Washington D.C. metropolitan area. Still, much can be learned from the study of mixed-use development throughout the United States, which may satisfy many of the desired community and architectural design aspects of TOD, but may not be intimately connected to transit.

Also important to note is the energy and commitment needed to realize these projects. TODs will succeed only within a highly supportive environment. The relative success of TODs is based on a combination of supportive market conditions; the desirability of the area; supportive policies and actions from local governments, transit agencies, and lending institutions; aggressive pursuit of and dedication to TOD development; realistic market studies; and developers who understand how to build and market TODs. If any one of these factors is not in place, the TOD will likely not achieve its full potential, as structures which support TODs, such as financing packages and zoning, have yet to be developed, implemented, and tested as extensively as conventional systems.

2. The Benefits

2.1 TODs can help revitalize declining neighborhoods and urban centers

In several examples, the implementation of light rail has served as a catalyst for urban revitalization by helping to redirect development back into existing communities. One case in point is the Ballston area in Arlington, Virginia. Ballston in the 1970s consisted of neighborhood streets with older homes and arterial roads lined with fast-food outlets, auto-repair shops, and a few low-density apartment complexes. Residents were moving away to suburbs beyond the Capital Beltway and the area was in decline. Metrorail arrived in the area in 1979, and by 1995, Ballston had become a showcase for successful Transit-Oriented Development through the concerted efforts of the Washington Metropolitan Area Transit Authority (WMATA), Arlington

[D] The City of Sacramento, CA began developing TOD Design Guidelines in 1989, the earliest use of this term to the authors' knowledge.

area property owners, and other stakeholders. The area had transformed into a vibrant urban center containing a regional shopping mall, over 2,500 new residential apartments and condominiums, more than 3.7 million square feet of commercial retail and office space with various ground-floor retail shops, and a health club. The regional shopping mall was a major catalyst in attracting employers, some of which built their headquarters within the walking radius of the station, including the federal government, Eastman Kodak, and Environ, all located within walking distance of Metrorail.

Ballston was successful as a result of aggressive planning by Arlington County and WMATA via Sector Plans which developed strategies for each of the stations along the line. The Ballston Sector Plan called for a varied mix of uses within the quarter mile surrounding the station. This included housing, office, retail, and open space. The County's new zoning used density bonuses as incentives to achieve the current form of development. The goal was to assemble a large population around the station in order to increase the potential for high ridership rates. In addition, WMATA has been aggressively supporting Transit-Oriented Development through its in-house real estate office that actively seeks joint development opportunities by pursuing air-rights leases, station-retail connections, and shared use of building systems.

Figure 2.1: *Overview of WMATA's Ballston TOD area. Photo source: Bernick & Cervero (1997)*

2.2 TODs can provide affordable housing near a readily available source of transportation, creating a high-level of mobility for households on limited incomes.

As stated earlier, households are spending between 14 and 22% of their income on automobile transportation. For many of these households, this expense is not a choice, but a requirement for connecting affordable housing with jobs. While TODs can potentially relieve any family, regardless of income, of the extra expense of automobile travel and ownership, many TODs may also be well-suited to become catalysts for redevelopment in lower-income neighborhoods. In these cases, development will require the involvement of both public and private interests, cities, redevelopment agencies, and counties, in order to ensure that development in these areas can overcome the typical barriers to procuring basic amenities and services, and go beyond to encouraging good, transit-oriented design.

A case in point is the Barrio Logan Trolley Station in San Diego, California, which is located within a predominantly low-income Mexican-American community that had been physically divided by freeways and industrial development over a number of years. Although the station had been in place since 1980, building activity had been difficult to implement before the Barrio Logan Redevelopment Project Area was designated in 1991. Within a year, the Redevelopment Agency, with the aid of non-profit affordable housing organizations, had built 144 units of affordable housing for households with annual incomes between $14,000 and $25,000. Construction is expected to begin soon on a commercial center across from the new homes. The Center will include a Mexican market and small shops totaling over 100,000 square feet. However, it has proven more difficult to get commercial development to occur as the area is not an "attractive" market to conventional developers and financing mechanisms that have developed to implement affordable housing are not available to non-residential projects.

Nevertheless, the success of the housing development in complementing the transit station is apparent from studies performed three years after its redevelopment area designation. Ridership surveys indicate that 1 in 7 trips made from the housing complex were made via the San Diego Trolley line at the time of the survey. According to Bernick and Cervero this is "a remarkable capture rate given that over 90% of Mercado households have cars available."[E] (Further information regarding Barrio Logan is included in *Case Study #5* in *Chapter III. Case Studies*).

[E] Bernick and Cervero 260.

Figure 2.2.a: *Mercado Apartments near the Barrio Logan Trolley Station.*

TODs can benefit households at various income levels as well as address a need that is neglected by the single-family household market. Studies in the San Francisco Bay Area have shown that Transit-Oriented Development can serve a particular market niche. These households tend to be small and typically earn a relatively limited income, which necessitates more affordability than a detached single-family home on a quarter acre parcel allows. As an example, high-density housing near the San Francisco Area's Bay Area Rapid Transit (BART), are attracting a large number of young, white-collar professionals, both singles and childless couples. Other households types which are well-suited for TODs include seniors who are economically and physically limited, and necessitate alternate means of mobility; empty nesters who might find a large home in the suburbs no longer necessary; and single-parent households with limited incomes needing less space, but more supportive services. These households are more willing to trade less private space for more public space and a high-level of amenities such as convenient shopping and gathering spaces, and greater accessibility and mobility, without the added cost of owning one or several cars.

Development in Pleasant Hill, one of San Francisco's suburbs, serves to illustrate the ability of TODs to fill this need. BART began service to Pleasant Hill in 1971, yet beginning in the early 1980s development in the area surrounding the station was falling short of the expectation that BART would attract development on its own. The station and its park-and-ride lots were still surrounded largely by single-family homes on large lots, a remnant of the area's rural past. The formation of a Steering Committee made up of local officials and aggressive action by the County redevelopment agency (the station area is in unincorporated Contra Costa County and surrounded by three cities) managed to create an environment that brought several multi-family housing developers into the area. In a little more than a decade, BART had several multi-family housing projects cozying-up to the borders of the station.

These developments were highly successful thanks to the increasing number of young professionals working in downtown San Francisco, which is conveniently located at the other end of the line. Within 15 months of opening its units, the Park Regency apartments had 98% of its units leased. Of the 892 units in the complex, 15% are affordable for low- and moderate-income

households. The developer of Bay Landing, another complex close by, discovered that transit proximity was a major factor in the rapid leasing of the units. As a result, developers began seriously considering BART as giving developments a location premium. A study supporting this performed by Cervero showed multi-family units within close proximity to transit stations along the BART lines demanding a higher premium over comparable developments not within walking distance of a BART station.[F] Currently Contra Costa County is undertaking an extensive planning process to develop the Pleasant Hill station site with transit-supportive uses on the BART parking lots. A one-to-one replacement parking will be accommodated within structures on the site.

Figure 2.2.b: *Illustration of proposed station area development at the Pleasant Hill BART Station. The project area is delineated in white.*

2.3 TODs can serve as a revenue source for transit agencies.

Where land is owned by the transit agency, TODs can serve as a source of revenue for transit capital improvements and operating costs through lease revenues, land sales, or equity partnerships from development surrounding the station. In addition, development that is transit-oriented can help an agency to boost revenue by increasing transit ridership. For example, BART is now actively seeking development opportunities on many of its station area properties. Most recently, the agency entered into a ground lease agreement with a local non-profit Community Development Corporation (CDC), which will develop a transit village on surface parking lots at its Fruitvale Station. The transit village will contain a vertical mix of housing, retail shops,

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[F] In 1994, rent for one-bedroom units near the Pleasant Hill station were $1.20 per square foot compared to an average of $1.09 for similar projects (in terms of size, age and amenities) that were in the same geographic submarket, but away from BART. Two-bedroom units near the Pleasant Hill station leased for around $1.09 per square foot compared to around $0.94 per square foot for comparable units away from BART (Bernick and Cervero).

community services, and structured parking. BART hopes not only to gain revenues through the ground lease, but also to increase ridership on two of its lines that serve the station. On another transit line, BART has negotiated a development agreement with La Salle Partnership and the two cities adjacent to a planned station, to provide development rights to La Salle in exchange for La Salle building the new West Dublin Station. A similar process is being undertaken for the Pleasant Hill BART Station.

In San Diego, an agreement between the Metropolitan Transit Development Board (MTDB) and a theater adjacent to the Grossmont Station allows patrons to use the station's parking in the evening, and generating $40,000 in annual lease revenues for the transit agency.

In the Washington, D.C. area, WMATA's efforts are at a more advanced stage than those of BART and MTDB. WMATA already receives approximately $200,000 dollars in annual revenues from Ballston Metro Center, an office complex directly above the station. The agency also received a percentage share of gross proceeds from the sale of condominiums built by Ballston Metro Limited Partners. At its Bethesda station area, Bethesda Place, a high-rise complex containing 370,000 square feet of commercial space, a Hyatt Hotel, a 10-story residential high-rise and an outdoor plaza, yields $1.6 million in annual revenues for WMATA from its 99-year air-rights lease. In Los Angeles, the MTA has a similar program of air-rights leases generating nearly $3.5 million annually.

2.4 The added activity generated by mixed-use development near transit stations can serve to increase ridership for the transit service.

Homes within a 1/4 mile of BART stations have leased faster than comparable developments out of the walking radius.[G] This attests to the desirability of living near transit stops. These types of developments would naturally bring increased transit ridership as many residents, according to Cervero, are likely to self-select themselves for transit-based living patterns. At Randolph Towers near the Ballston Station 69% of the residents commuted to work via transit. Near the Pleasant Hill BART Station, 55% of residents from Wayside Plaza and 37% of residents living in Park Regency regularly commuted via BART's Pittsburg/Bay Point Line. This is a remarkable level of ridership considering the increasing decentralization of Bay Area employment centers spurred on by suburban business parks which are not well-served by BART.

In addition to increasing ridership, mixed-use development can also contribute to reverse commute patterns which better utilize the capacity of the transit system. The Fruitvale Transit Village seeks to increase ridership for both those who live in the Fruitvale neighborhood and those who live elsewhere and work or shop in the neighborhood. Similar development is in the planning stages around BART's MacArthur Station and Richmond Station, both of which are urban infill sites in older inner city neighborhoods.

[G] Bernick and Cervero 160.

2.5 Mixed-use TOD can generate strong sales tax revenues.

TODs on both coasts have brought added revenues to cities and counties that heavily depend on a sales tax for revenues. WMATA's Pentagon City Fashion Center, located southwest of Washington, D.C., was developed in the early 1990s. The management overseeing the mall's operation estimates that over 50 % of shoppers and customers arrive by Metrorail, generating a fair amount of sales tax revenue for Arlington County. According to Cervero, "many are federal workers who come from the district e.g., the Federal Triangle area during lunch hour, a 5- to 10-min train ride away."[H] However, TODs along region-serving systems such as BART and WMATA, should be selective in the types of retail they attract. In several cases around the country, big-box retail has been built in close proximity to transit stops. While these uses may generate sales tax they do not generate many transit trips given the size and bulk of most of their stock. Examples are located along the BART system, in Denver, and San Diego.

2.6 Mixed-use TODs can deliver more highly-valued development.

Basic economic theory suggests that land values should be higher within TODs than in similar areas that do not have transit access. Whether the development is housing, retail, or employment, improved access should increase the value of development. Studies, since the earliest days of economic theory, have shown that land values increase as one moves closer to centers of economic activity (Central Business Districts or in many areas today in "Suburban Clusters").[I] In most regions, the primary rationale for this is the personal and real costs associated with commute time. Living within convenient access to an economic activity center (employment) involves a shorter, less costly commute. But land values are typically higher in these areas compared to areas farther from the activity center. While living farther out carries the added burden of a longer commute, this economic and quality of life tradeoff is a fundamental concept driving urban land values.[J]

Transit-Oriented Developments, as both portals to economic activity centers along transit lines and as potential economic activity centers themselves, should also respond to this pattern of increasing land value. Based on enhanced transportation systems, TODs lower the personal and real costs of commuting through improved convenience, and reduced travel times and costs for

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[H] Bernick and Cervero 231.

[I] Elizabeth A. Deakin, "Jobs, Housing, and Transportation: Theory and Evidence on Interactions between Land Use and Transportation," *Special Report 231: Transportation, Urban Form and the Environment* (Washington, DC: Transportation Research Board, National Research Council, 1991) 27.

[J] Robert T. Dunphy found that Southern California home buyers are willing to travel another 15 to 30 minutes to shave $10 to $15 per square foot off the price of their house. Additionally, in comparing pairs of counterpart homes of similar quality and size, on a similar lot, Southern California home buyers were willing to pay between 2.5 and 4.4% more for each mile the home was located closer to an employment center, and between 1.6 and 3.5% more for every minute their commute time was reduced. Robert T. Dunphy, "The Cost of Being Close: Land Values and Housing Prices in Portland's High-Tech Corridor," *Working Paper 660* (Washington, DC: Urban Land Institute, 1998).

riders who would otherwise opt to drive.[K] As a result of improved transit service, TODs can be seen as points or zones where commute costs are reduced and, based on this model, land values increase.

Yet, little research exists which directly shows disparities in land values between TODs and comparable developments that are not well-served by transit. A study conducted by John Landis, shows that for every meter that a BART-served Alameda County home was closer to a BART station, its 1990 sales price increased by $0.29, all else being equal. Smaller levels of housing-value capitalization were also found along light rail systems in San Diego, Sacramento, and San Jose.[L]

Rent premiums are one way of gauging land values around TODs. Cervero's research of the BART system found that, on average, rents for one and two-bedroom units increased 10 to 15% as compared to comparable units (in terms of size, age and amenities that were in the same geographic submarket but away from BART). Likewise rent premiums in Atlanta's MARTA-based TODs and WMATA sites showed "modest" rent premiums over their freeway-based counterparts. These premiums were attributed to the fact that rail-served areas were more compact, more pedestrian-friendly and, yielded more leasable space overall (due to decreased parking requirements and other factors). Being mixed-use centers more of the leasable space is dedicated to retail uses which typically achieve rents twice as high as office.[M] Additionally, Orenco Station showed similar results for sales premiums of single-family homes. (See *Case Study #1* in *Chapter III. Case Studies*.)

As mixed-use centers, TODs themselves can also be expected to generate a certain attraction as employment centers. Depending on the regional market and the local land use policies, TODs can be a catalyst for major employment growth around stations. Atlanta's Bell South Corporation recently announced plans to move 13,000 of its 88,450 employees from freeway-based outposts to more centralized "business centers" around MARTA rail stations. BellSouth, like many large companies, originally strategized to locate their offices on the suburban fringe in order to take advantage of cheaper rents and the ostensible convenience of easy freeway access. Over the last few years, the greater cost of increased travel times and stress for commuting have prompted the company to consolidate their myriad suburban leases and focus their land-buying power on reducing their employees' need for an automobile, supporting Transit-Oriented Development. The flagship of BellSouth's move is the 51-acre Lindbergh Center mixed-use development,

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[K] A recent study conducted by the American Public Transit Association shows that for every $10 million invested in public transit, over $15 million is saved in transportation costs to both highway and transit users. These costs include operating costs, fuel costs, and congestion costs. Cambridge Systematics with Economic Development Research Group, *Public Transportation and the Nation's Economy: A Quantitative Analysis of Public Transportation's Economic Impact* (New York: American Public Transit Association, October, 1999).

[L] John Landis, Subrajit Guhathakurta, William Huang, and Ming Zhang, "Rail Transit Investments, Real Estate Values, and Land Use Change: A Comparative Analysis of Five California Rail Transit Systems," *Monograph 48* (Berkeley: University of California, Institute of Urban and Regional Development, 1995). As cited in Robert Cervero, "Transit Villages in California: Progress, Prospects, and Policy Reforms," *Working Paper 98-08* (Berkeley: University of California, Institute of Urban and Regional Development, October 1998).

[M] Bernick and Cervero 132.

which is discussed further in the Case Studies section of this report. (See *Case Study #3* in *Chapter III. Case Studies*.)

The role of TODs as employment nodes is supported by Robert Cervero's 3-dimensional spatial analysis of the employment densities in the San Francisco Bay Area, which shows a strong correlation to the BART alignment. (See Figure 2.7)

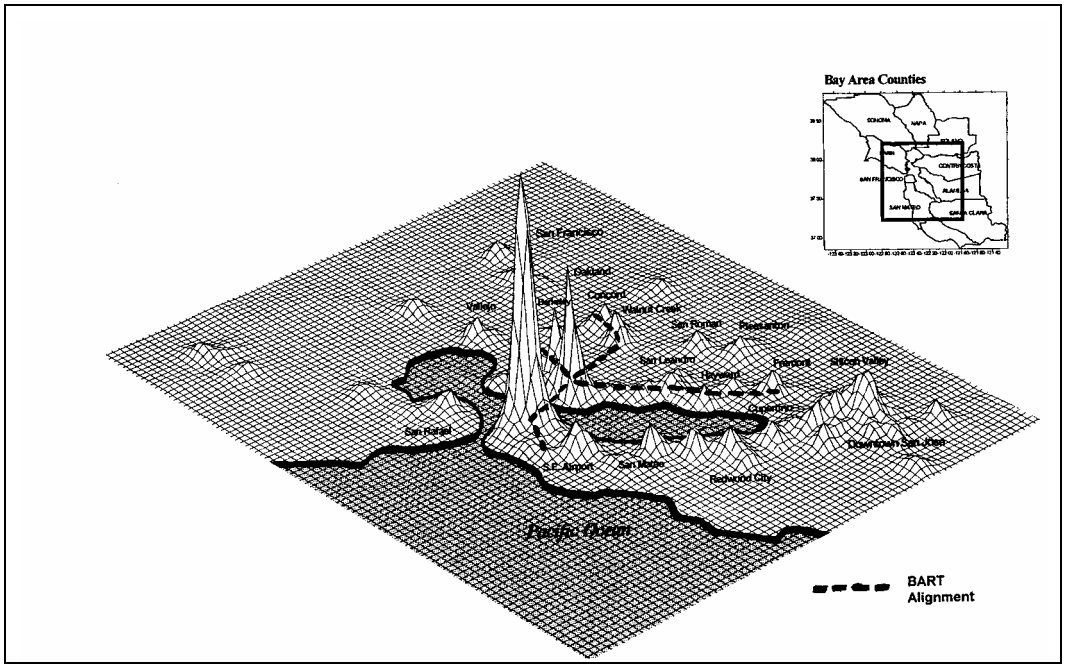

Figure 2.7: *Employment Densities in the San Francisco Bay Area closely correlate with the BART alignment.*[N]

Cervero's studies show that employment in BART zip codes grew by 30.3 % from 1981 to 1990, capturing 57.1 % of the growth in the Bay Area. However more than 95% of this growth occurred around the four downtown San Francisco stations.[O] Though this does not speak directly for BART as a stimulus for employment growth at outlying TODs (the majority of East Bay employment growth took place at campus-based office parks along the Interstate 680 corridor), it does show that higher levels of transit access, in TODs or traditional center cities, has the ability to stimulate growth above the average, and to slow or reverse the exodus of jobs from existing (downtown) employment centers by providing points of reduced commute costs. (The peaks indicating East Bay suburban employment centers speaks more to local policy and market effects.)

The reality is that the relationships of factors affecting land values are more complex than this basic model suggests. The fact that BART's surface lots have increased in value is due more to land shortages within a metropolitan area that is continuing to add jobs and population with the

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[N] Bernick and Cervero 168.

[O] Cervero reports that of the BART-related growth, the East Bay captured only 1.1%. Therefore 29.2% of the 30.3% overall BART-related growth must be attributable to growth in San Francisco.

may not be strong enough to trigger TOD projects on its own; other supportive policies and market conditions are usually necessary. For example, although the Pleasant Hill BART Station was completed in 1971, development did not begin until 1984, when the county created the Pleasant Hill Redevelopment Area as a model for TOD housing, putting $40 million toward infrastructure improvements to attract new development. Up until the early 1990s, the 125 acres around the BART station were built-out; yet, the station itself had not received any development activity. Today, development on BART's station properties is moving forward due to the current upward trend of the local market, with plans for residential, office, and civic uses.

In contrast to Pleasant Hill, several station sites have not met expectations for success, because of lower land values surrounding the station area (beyond 2,000 feet). Numerous efforts along the system have followed a similar course. Planning for new development around the Fruitvale BART Station may have focused much attention on its potential as a vital transit village, but this is the result of long-term efforts by the Spanish Speaking Unity Council, a local Community Development Corporation. Before the 1993 charrette, when architects and designers gathered to formulate a vision for the transit station, the Fruitvale Neighborhood was made up largely of minority Hispanic families on limited incomes and marginal local businesses attractive only to the immediate neighborhood. Since 1993, the continued expansion of the Hispanic community in the Bay Area and the general increase in economic activity have added to the vitality of the neighborhood, a similar situation to that of Barrio Logan in San Diego.

Yet, some developers do actively seek development rights along transit lines and speculation does happen, many times successfully. In Denver, Colorado, The Commons is an infill project surrounding a planned station on the Central Platte Valley LRT Line, which is currently under construction. The site was purchased by one developer who then initiated work with the City of Denver on a master plan for the area. With the special PUD zoning in place, the master developer proceeded to sell portions of the property to individual developers at a premium. A more in-depth discussion of The Commons is presented in *Chapter III. Case Studies.*

Still, it is more often the case that local jurisdictions and redevelopment agencies must work to nurture development. The City of La Mesa's Central Redevelopment Area is located along the San Diego trolley system. The crowning piece of this project is the La Mesa Village Plaza, which incorporates a trolley stop into its central plaza. Surrounding the plaza are four multi-story buildings consisting of 62,500 square feet of office space and 29,000 square feet of retail space located below 95 upper-end residential condominium units, in addition to restaurants and other office space. Structured and grade-level parking provide 287 on-site parking spaces (1 space per dwelling unit and 2 spaces per 1,000 square feet of commercial use). Additional streetscape improvements and infrastructure improvements around the trolley stop help to tie this major project into the fabric of the urban center of downtown La Mesa.

The La Mesa Village Plaza mixed-use project was long in the making. Market conditions, financing, and hydrocarbon soil contamination hindered earlier attempts at redevelopment on this key site. The Redevelopment Agency took responsibility for clean up of the site to enable the developer to secure project financing. Since the Central Redevelopment Area was adopted in 1973, the county estimates that the 55-acre area has generated over $3.2 million in additional tax revenues.

2.7 Transit investment generally brings positive local and regional impacts

While transit may not currently yield profitable revenues in a market such as that of the U.S., its overall public and private benefit can be measured through the positive externalities created as a result of investment in the system. A recent report completed by Cambridge Systematics, Inc. on behalf of the American Public Transit Association (APTA) found that private businesses would realize a gain in sales roughly 3 times the public sector investment in transit capital and operations i.e., a $10 million in transit investment results in a $30 million gain in sales.[P]

The APTA study also identifies a multiplier effect over time, observing that business output and personal income are positively impacted by transit investment, growing rapidly over time. These transportation user impacts i.e., increased mobility for employees and decreased travel expenses due to a mode shift from automobiles to transit create savings to business operations, and increase the overall efficiency of the economy, positively affecting business sales and household incomes. The study reports that for each $10 million in investment in the short run (during year one), a sustained program of transit capital investment will generate an increase of $2 million in business output and $0.8 million in personal income. Over the long term (during year 20), these benefits increase to $31 million and $18 million for business output and personal income respectively. Transit capital and operating investment generates personal income and business profits that also produce positive fiscal impacts. The study estimates that on average, a typical state/local government could realize a 4 to 16 % gain in revenues due to the increases in income and employment generated by investments in transit. These gains cannot be viewed as a return on investment, but as an added economic benefit beyond the provision or improvement of transit service.

3. Conclusion

The monetary and fiscal economic benefits identified here are only one part of the greater social welfare benefit, or quality of life, that comes with transit. Many of the public and collateral gains such as reduced crime are more difficult to measure but nonetheless drive the discussion regarding quality of life. Transit-Oriented Developments will only help to improve the effectiveness of transit and the ridership levels which can justify continued transit investment. At the same time, as the case studies discussed previously and in the following chapter show, TODs themselves bring localized public and private benefits that are both direct and indirect.

[P] Cambridge Systematics.

III. Case Studies

The following case studies have been assembled to highlight efforts in other communities that may serve as examples for future efforts in Phoenix, Mesa, and Tempe. These case studies were chosen to highlight efforts by communities to develop plans for TODs, and the efforts of transit agencies, local jurisdictions, and private developers to implement TODs. The case studies were also chosen for the jurisdiction's similarity in density and character to Phoenix, Mesa, and Tempe. Below is a comparison of Case Study densities in relation to those of the Valley Communities.

Table 1: Comparison of Community Densities

CITY	DENSITY [A] (People/sq. mi.)
Mountain View, CA	5,578
Tempe	**3,598**
San Diego, CA	3,546
Denver, CO	3,162
Atlanta, GA	2,996
Mesa	**2,732**
Phoenix	**2,635**
Hillsboro, OR	2,134

[A] "City Profiles," *Yahoo! Real Estate*, 19 March 2001, <http://verticals.yahoo.com/cities/results/profile.html>.

1. Case Study #1: Orenco Station - Linking the Suburbs to Downtown

1.1 Background

Orenco Station is a mixed-use project built near a light rail station in Hillsboro, Oregon, a suburban community near Portland. The 97 acres of new development are bounded by Butler Street to the North, N.E. Cornell to the south and east, and existing development to the west. The site is divided between small-lot, single-family homes; multi-family homes; and a village center with commercial, office, retail, mixed-use residential over retail, and live/work lofts. There is also a large community green space and several pocket parks throughout the development. Future development is planned to extend from this site to the Orenco light rail transit station, an 1/8 of a mile away. The MAX Westside line provides service to downtown Portland and downtown Hillsboro.

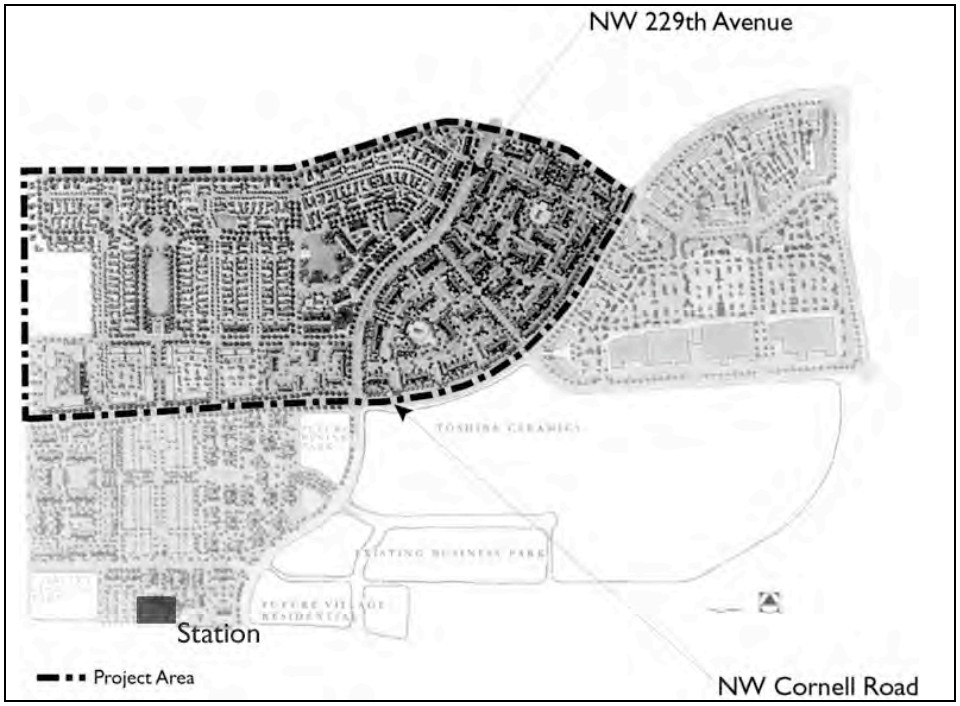

Figure 1.1: *Illustrative Plan approved by the City of Hillsboro.*

The project has many of the features essential to Transit-Oriented Development. Interconnected streets make shorter walking and biking distances, tree-lined streets and on-street parking create a comfortable sidewalk environment, and alleys move garages to the rear of the lot making sidewalks into 'pedestrian priority' spaces. Residents can walk from their homes to open space and retail amenities including: a Starbucks, several restaurants, a sporting goods store, a dental office, and dry cleaners within the Town Center. A future New Seasons Market, a locally owned grocery store, is to be completed in October 2001 on the eastern part of the development.[2]

The area North of Cornell was initially subdivided for single-family homes in 1959-60. The developer sold the 15,000 square foot speculative lots as "paper lots" without infrastructure in place.

The project produced one house and a duplex, while the rest of the lots remained vacant. As time progressed and the fairly large tract remained undeveloped, the city reclassified the project area and its surroundings in their 1978 General Plan for industrial. By the 1980's, several high-tech employers began to move into the surrounding area. During this period it became obvious to the city that the residential subdivision was unworkable with its multiple owners and small parcels, so the city designated it an Urban Renewal district. This would allow the city to buy up parcels from the original owners, though eminent domain was never used. At about the same time, Pac Trust, Orenco Station's project developer, acquired 190 acres in the area with the intention of pursuing industrial development. The city and the developer then negotiated a land swap in order to create a more contiguous and developable project area.

One could say that Orenco Station was one of many products that resulted from the movement beginning in the 1970s to reign in rampant development in the Portland Region. At the time of the land swap, downtown Portland was already well-known as a successful revitalization story. Tri-Met and Metro, the regional transit authority and regional government respectively, had begun emphasizing mixed-use, Transit-Oriented Development in their policies and plans.

The City of Hillsboro was also at a critical juncture in its development. Tri-Met was in the process of planning the Westside Light Rail and was intending to extend the system to downtown Hillsboro. The Westside MAX, which is part of the Portland region's light rail system, would connect Hillsboro with downtown Portland and suburban communities in between, bringing a wealth of opportunities for Hillsboro to grow its employment, retail, and residential base. But, the developer's initial proposal for the site was to build industrial uses near the planned light rail stop in Orenco. The city was amenable to the proposal and would have approved it were it not for new transit and development paradigms being developed at a variety of levels. At the time, the Portland region was not meeting air quality standards and had been placed under "non-attainment" status, which put all the more pressure on local jurisdictions and agencies to plan for transit and create a supportive ridership base. In the early 1990s, the LUTRAQ (the Land Use, Transportation, and Air Quality Connection) project further refined the process by developing transportation model enhancements and alternative land use patterns for Washington County, that measure the benefits of multi-modal development and convinced the public that it was better for them.[B] Given that a significant portion of the Westside extension was being funded by FTA, Hillsboro came under pressure to ensure that transit ridership numbers would be met lest funding for the extension be denied.

Also, Tri-Met had adopted its mission statement in 1993, after 19 months of public involvement, that directed the transit agency towards thinking more comprehensively about their transportation system in conjunction with regional and local land use patterns. Concurrently, and along the same lines, Metro began the Metro 2040 process in order to encourage cities to look at alternative forms of development given that state mandated Urban Growth Boundaries were quickly being overrun by prevalent low-density suburban development practices. Both processes involved not only local jurisdictions, but also citizens, business leaders, non-profits, and developers. One of these was Pac Trust, who began to warm to the idea of developing a mixed-use, pedestrian- and transit-oriented community.

[B] "Vision to Action: How 1000 Friends of Oregon Helped Portland Grow, Say No to a Big Highway and Stay Healthy," *1000 Friends of Oregon*, 4 June 2001, < www.friends.org/resources/lutraq.html>.

A turning point occurred when the developer approached the city to formulate a zoning code for the area that would allow mixed-use development. The city hired Marion Hemphill, a former planner with the City of Portland during its "urban revitalization turning point" under Neil Goldschmidt's tenure as mayor, to head their Station Area Planning Office and write an interim zoning code that would change regulations around proposed stations. The resulting code, the Light Rail Station Area Interim Protection Ordinance (SAIPO) was adopted in 1994. At the same time, Pac Trust hired a local planning and architecture firm, Fletcher, Farr, Ayotte, to master plan the development. Eventually, the city replaced the SAIPO with the Station Community Planning District, in 1996. The extensive regulations, and design standards and guidelines encompass an entire second volume in the zoning ordinance to describe appropriate development around transit stations.

Figure 1.2: *Orenco Town Center.*

Wisely, given their lack of residential development experience, Pac Trust partnered up with Costa Pacific Homes, an experienced local home builder to implement the project. Focus groups and market studies formed the basis for the target market for Orenco Station. As the project is located within Washington County's Silicon Forest, the developers extensively interviewed employees from the nearby Intel, Fujitsu, and Toshiba facilities. "There was quite an academic approach that was taken as far as the planning was concerned," said John Kohlmoos, one of Costa Pacific's sales managers. "It wasn't just a case of build it and hope that people will come to buy it."[C]

The Orenco Station plans were finally approved in 1997 and construction began soon after. Sales have been brisk particularly for the small single-family units and townhomes. The community has won various awards including: *Master Planned Community of the Year* of the 1999 National Sales & Marketing Gold Awards and *First Place – Transit-Oriented Community* from the 1998-1999

[C] Rosemary Leonetti, "New Urbanism Success Story: Planned Community wins National Awards and Sells Lots of Homes," *Office.com,* 17 March 2000, <http://www.office.com/global/0,2724,64-16740_2,FF.html>.

Livable Communities Transit Design Competition, and has been written up in various newspapers and reports. The project is expected to be completed in 2002.[D]

Figure 1.3: *Townhomes at Orenco Station are modeled after the brownstones of Boston.*

Table 1.1: Land Use Program

Land Use Type	Land Area (acres)	Under Construction (as of this writing)	Constructed Densities	Full Buildout Potential
Single-Family	58.0	400 du	6.9 du/ac.	400 du
Multi-family	62.0	1,388 du	22.5 du/ac.	1,388 du
Mixed-use Village Center	7.0	25,000 sq. ft. Retail with 22 lofts above and 24 live/work du	not available	25,000 sq. ft. Retail, 22 loft units 24 live/work
Office/Commercial	52.0	0 sq. ft.	n/a	790,000 sq. ft.
Parks/Open Space	20.0	20.0 ac.	n/a	20.0 ac.

Sources: "Orenco Station" by Livable Oregon, "Orenco Station" by City of Portland, OR, Information Sheet by Orenco Station, and conversation with Dick Loffelmacher of PacTrust. Numbers are approximate.

1.2 Institutional/Implementation Tools

No single policy decision or initiative led to the development of Orenco Station in its resulting form. Rather, the development was transformed by a variety of events that occurred at the time leading up to and during the master planning process. Local, regional, and developer initiatives combined to create an environment where mixed-use and Transit-Oriented Development could be

[D] City of Portland, Tri-Met, *Community Building Sourcebook* (1999) 6. Also available online at <http://www.tri-met.org/communitybuilding.htm>.

advanced toward implementation. The discussions happening at a local and regional level set the stage for the development, and Pac Trust saw an opportunity to create a development that would enhance their profits.

However, a number of policies and regulations were simultaneously developed or resulted from the process:

- **Tri-Met Mission Statement – Adopted in 1993:** The agency's mission statement was the culmination of 19 months of public process and rethinking the role of the transit agency within the region. The mission statement is defined by several principles, the most pertinent to this study being the principle of linking land use to transportation investments. Tri-Met, with this goal in mind, was instrumental in fostering an atmosphere that supported transit-oriented development.[E]

- **Light Rail Station Area Interim Protection Ordinance (SAIPO) – Adopted in 1994:** This was an interim overlay that discouraged non-transit and pedestrian-oriented development while at the same time encouraging uses and development that supported the future light rail station. The SAIPO was the culmination of efforts between the City of Hillsboro, Pac Trust, and Tri-Met to create a workable, yet innovative ordinance that would allow mixed-use and compact development. The ordinance was replaced by a permanent zoning called *Station Community Planning Areas (SCPA)* in 1996.

- **Station Community Planning Areas Zoning Ordinance (SCPA) – Adopted in 1996:** The SCPA is the permanent zoning for station areas within Hillsboro. It replaced the SAIPO, which was an interim ordinance temporarily in place until the new ordinance and a rezoning could occur. The SCPA is extensive in its scope covering land use and parking regulations and design standards and guidelines, and encompasses an entire second volume of the Zoning Ordinance.

- **Station Community Planning Area Designation (SCPA) in Metro 2040 Plan – Adopted in 1996:** The area within walking distance of the Orenco Station, including the Orenco Station development, is designated as a Station Community Planning Area in the Metro 2040 Growth Concept. Metro 2040 was a 3-year process involving the public, local jurisdictions, the building industry, the business community, and other interest groups to look at alternative growth scenarios for the region, based to public opinion. The Concept studied the interdependence between three concepts that define the Portland region: the size of the region as defined by the Urban Growth Boundary, transit investment, and land use and design patterns. The educative and participatory process, which included the Orenco station area as a study site, disseminated ideas of Transit-Oriented Development, and became the seed from which Orenco Station developed.

- **City of Hillsboro Comprehensive Plan, Orenco Designated as a Station Community Planning Area (SCPA) – Adopted in 1998:** Overall density targets of 45 persons per net acre are anticipated under this designation. A wide variety of housing types, design

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[E] City of Portland, Tri-Met, "Tri-Met's Vision Statement," (1993). Also available online at: <http://www.tri-met.org/strategic.htm>.

standards, and a multi-modal transportation system are all part of this designation. Zoning districts also emphasize concentrating jobs and housing adjacent to transit stations. This designation was developed after Orenco Station was approved.

Table 1.2: Project Information

When was transit in place:	❖ The Westside Light Rail was in the planning stages as early as 1992, but did not open until 1998.
Project construction start date:	❖ Master Plan approved in September 1997. Project started immediately after approval.
Current Project Status:	❖ Currently, the single-family homes, and most of the multi-family units are complete. The village center containing both office and retail components is also complete. A grocery store with lofts above is set to open in October 2001, plus an additional 790,000 sq. ft. of office and retail space is in the planning stages.
Agencies:	❖ City of Hillsboro, METRO (Regional Government and MPO), Tri-Met (Regional Transit Agency), were the primary parties involved. FTA (funding of Westside Light Rail).
Developer:	❖ Pac Trust: Orenco Station Master Plan
Builder:	❖ Costa Pacific Homes: Single- and Multi-family units ❖ Fairfield Investment Company: Luxury apartments ❖ Simpson Housing: Apartments and Townhomes ❖ Baugh Construction and P + C Construction: Live/Work Lofts
Design Team:	❖ Fletcher Farr Ayotte: Master Planners and Town Center Architects ❖ Alpha Engineering: Civil Engineers ❖ Iverson & Associates: Residential Architects ❖ Walker and Macy: Landscape Architects
Financing:	❖ The total cost of the project was $150 million (in 1999 dollars).
Major retail or office tenants:	❖ Starbucks, Prudential, New Seasons Grocery Store

1.3 Conclusion

Home sales have exceeded expectations, with prices 20-30% higher than the area average and most homes were sold before they were built.[F] Sales began in 1997, when the models opened, and through the beginning of June 2000, averaged approximately 7 sales per month. Surprisingly, the townhomes and small-lot cottages are capturing the majority of the sales. This demonstrates that smaller homes, which are more conducive to creating a walkable community, satisfy the needs of a strong segment in the area's market, and when coupled with community amenities available at Orenco Station, can achieve a pricing premium, even when compared with larger-lot homes in the area.

The 'community feel,' created by the TOD design features was cited as the main reason people bought homes in Orenco Station. According to a recent survey, 'Community Design/Amenities' was, by far, the primary reason for buying into the community.[G] In addition, those living in the live/work portion of the project are also calling themselves the 'stoop people' after the front stoops on the units, obviously proud of their purchase and its more urbane amenities.

Both Tri-Met and Metro, two agencies with limited local regulatory power, were influential in the outcome at Orenco Station, because of the comprehensive and well-publicized efforts they were undertaking in changing the course of land use and transportation. Education and participation were key to this shift in policy at the local level. It also was helpful that many of the developments along the Westside light rail, including Orenco Station, were being implemented at the same time as the light rail system. This allowed developers to work with Tri-Met to integrate the stations more fully into the surrounding, existing and proposed communities. During the process, Pac Trust and Tri-Met negotiated a land swap in order to improve pedestrian access to the station. Tri-Met's park-and-ride lot was to be located adjacent to the station, interfering with pedestrian access from the development. The lot for future park-and-ride was swapped with an adjacent development parcel, improving connections with transit.

It is important that on-going efforts encourage transit use to ensure the success of TODs even after construction and tenancies are established. This is especially important where greenfield development is concerned as land around the station may not be fully developed to support walking to the station in the interim. Efforts are being made to encourage transit ridership in the area. Each household in the Orenco Station development receives a free, one-year, all-zone transit pass for the first year, to instill transit ridership as a viable option. In addition, the Intel plant runs a shuttle between the station and factory to encourage employees to use transit. These efforts to increase ridership could be paying off. As of May 18, 2001, the Orenco Station was generating approximately 525 average weekday boarders for the Westside Light Rail. However, it is unclear what portion of ridership is coming from the development, and how much is being contributed by adjacent employers such as Intel and Fujitsu. Yet, as the area matures, and if efforts continue to encourage transit use via policy and programs to support TOD designs, auto-dependency will be less prevalent in the transportation patterns of Orenco.

[F] Lynn Weigand, "Orenco Station," *Livable Oregon Case Study Brochure*, First Edition (June 1999).

[G] Weigand 2.

The success of Orenco Station is spawning imitators on adjacent properties. West Hills Development of Beaverton, is in the pre-construction stages of building Orenco Gardens; 400 single-family homes and 440 multi-family units on 82.6 acres, located across the rail line from Orenco Station. The adjacent development has been subject to complaints from residents and Pac Trust that their architectural standards and lack of open space do not match the standard of existing development. Under pressure, the developer modified the designs to include auto access from alleyways for a third of the houses, and reoriented some of the homes so they face the street.[H]

2. Case Study #2: The Crossings: Transit-Oriented Reuse of a "Dead" Mall

2.1 Background

The Crossings is a 17-acre infill project located in Mountain View, California. The city is located in San Mateo County, on the peninsula lying between the City and County of San Francisco and Santa Clara County's Silicon Valley, two areas with the highest job growth in the country at the time the development was taking place. As such, its position makes it a prime market for housing, particularly given the overall housing shortage in the Bay Area.

The project is built on a site previously occupied by a 1960s, enclosed mall, The Old Mill Shopping Center. The mall began to decline in the early 1980s, several years after a larger, more modern shopping center opened nearby. However, its proximity to a mix of employment, residential, and other commercial uses made it a prime site for infill development in a city that is largely built-out. The mall was also located along the CalTrain commuter rail line that connects to both of the major employment hubs of San Francisco and the Silicon Valley, but the site was not served by a station.

Figure 2.1: *The drawing on the left shows the original mall site, while the drawing on the right shows the plans for the Crossings done by Calthorpe Associates.*

[H] David R. Anderson, "Orenco Gardens Changes Meet OK," *The Oregonian* 16 February 2001.

Planning for the project began with the San Antonio Precise Plan. In the 1970's, several San Francisco Bay Area cities used Precise Plans to encourage compact infill development. They are intended to create a comprehensive planning/zoning document with provisions and guidelines that replace the original zoning, much like a PUD. Requirements for public involvement are similar to a zoning change, which assure that the process involves all stakeholders, including the Planning Commission, the City Council, citizens, and developers. After months of involvement and planning, the San Antonio Precise Plan was adopted in the 1980's. The plan called for multi-family housing, consisting of only one unit type throughout the site, garden apartments, at about 12.5 units to the gross acre. This was one of three TOD projects being planned in the area at the time.[I]

TPG purchased the site and saw the opportunity for a mix of housing types, including single-family residential, as well as apartments. The developer approached the city to revise the Precise Plan and hired Calthorpe Associates to formulate a plan that would allow a mix of housing types. Calthorpe, in turn, proposed adding neighborhood-serving retail near the future transit station to serve residents of the development. The amended Precise Plan laid out the land use program that guided the development as a mixed-use, transit-oriented neighborhood. The revised San Antonio Precise Plan was adopted in 1992, but construction began in 1995.

The result was a development containing a mix of residential housing types including: single-family detached units, rowhouses, townhomes, and condominiums. A small component of neighborhood-serving retail faces the new San Antonio CalTrain Station. The neighborhood is designed to facilitate walking through the use of small-scale blocks, interconnected streets, neo-traditional architectural detailing, and more pedestrian amenities than are typical of most new subdivisions. Homes are located within a short walk of a variety of amenities including: three pocket parks, a travel agent and a hairdresser, and a grocery store and retail center on the edge of the site, but within walking distance.

Figure 2.2: *Single-family homes at the Crossings.*

[I] Association of Bay Area Governments, "City Employs Planning Tool to Intensify Development," *Theory In Action: Compact Communities* 12 May 2001 <http://www.abag.ca.gov/planning/theoryia/compmtnview.htm>.

While a new CalTrain transit station was in the planning stages for years, it was not built until after most of the development was in place, with the exception of the condominiums. However, the plan was developed with the knowledge that it would be served by a commuter rail station. The San Antonio Station was created when the Rengsdorf Station, a mile down the tracks, was moved due to a lack of parking capacity. The Crossings, on the other hand, is able to accommodate 200 parking spaces, 100 of which are built beneath the condominiums and designated for CalTrain commuters. The new station location also provides improved access to a Hewlett-Packard campus on the opposite side of the railroad tracks.

Besides being compact and pedestrian-oriented, the development also had a sustainable component to it. The developer reused concrete and asphalt from the mall's structure and parking lots as fill for the site and in the concrete used for front porches and foundations. The project is one of only a few to transform an auto-oriented strip mall into a pedestrian-oriented community.[J]

Figure 2.3: *The Crossings commercial use is located on the ground floor of the row houses, and is oriented toward the transit station.*

[J] "Case Study: The Crossings," *Creating Quality Places* 1 September 2000, 1 March 2001 <www.qualityplaces.marc.org/4a_studies.cfm>.

Table 2.1: Land Use Program

Land Use Type	Land Area (acres)	Under Construction (as of this writing)	Constructed Densities	Full Buildout Potential
Single family	6.3	102 du	16.3 du/ac.	102 du
Row Houses	2.2	99 du	45.0 du/ac.	99 du
Townhomes	0.9	30 du	35.0 du/ac.	30 du
Condominiums	2.2	128 du	58.0 du/ac.	128 du
Retail	n/a	2,000 sq. ft.	n/a	2,000 sq. ft.
Village green/ pocket parks	5.3	5.3 divided into 3 parks	n/a	5.3 ac.

Sources: City of Mountain View Website, Curt Peterson of TPG Development, Lynnie Melena of City of Mountain View.

2.2 Institutional/Implementation Tools

Unlike the other Case Studies, this project took place within a context where there was no larger policy initiative encouraging Transit-Oriented Development.

- **General Plan Policies (1992):** According to the Association for Bay Area Government, the 1992 General Plan contains policies supporting TOD's.

- **San Antonio Station Precise Plan:** Laid out the land use program that would later guide the development as a mixed-use, transit-oriented neighborhood with a variety of housing types and limited services. The plan was first written in the 1980's, with a preferred use of condominium development. It was rewritten in 1992 to accommodate a mix of uses and housing types.

Table 2.2: Project Information

When was transit in place:	❖ The CalTrain Commuter Rail has been in operation since 1863. The San Antonio Station relocation was completed in April 1999.
Project construction start date:	❖ Construction started in 1996 and was completed by 1998.
Current Project Status:	❖ All 359 units and the retail space are complete and occupied.
Agencies:	❖ City of Mountain View and CalTrain JPA.
Developer:	❖ TPG Development Corporation
Builder:	❖ TPG Development Corporation
Design Team:	❖ Calthorpe Associates: Master Plan and Architect for Housing with exception of Condominiums ❖ Seidel & Holzman: Architect for Condominiums ❖ Gary Strang: Landscape Architect, Phase I ❖ Gazzardo and Associates: Landscape Architect, Phase II and III
Financing:	❖ The Crossings was privately financed, amount unknown. No financial incentives from public agencies. CalTrain Station was publicly financed.
Major retail or office tenants:	❖ The ground level of two row houses are designated for retail uses. A local hairdresser and travel agent each own and operate a 1,000 sq. ft. shop.

2.3 Conclusion

Successful Transit-Oriented Development can increase the marketability of a development. A recent survey quoted in the San Jose Mercury News, showed homes within The Crossings selling for much higher prices than median prices for the area. At the time of the survey, the average price for a 2,000 sq. ft. single-family, detached home in Mountain View went for $530,000. In contrast, a 1,410 square foot condo at The Crossings listed for $549,000 and a 1,760 sq. ft. single-family home listed for $799,888.[K] Of course, a certain amount of the price increase can be

[K] Chuck Carroll, "Transit Villages Face Uphill Battle," *San Jose Mercury News* 24 March 2001, 12 May 2001 <http://www.siliconvalley.com/docs/news/depth/archive/2001/march/transt032401.htm>.

attributed to the fact that these are new homes in a market that cannot support many new homes at such close proximity to two major employment centers. Although some people may consider the lots too small, interviews with residents of The Crossings show that they are willing to make some sacrifices to live near the transit line, be able to walk to amenities, and have open space nearby.[L]

This project is also an example of how governmental tools, the Precise Plan in this case, can create a forum for constructive negotiation between the public and private sectors. The compromise between the developer and the city resulted in a favorable development that met the housing and parking needs of the city and CalTrain respectively, while still being profitable for the developer.

The rapid sales of the single-family homes and townhomes illustrates that a mixed-housing type development can serve an important function in providing new housing in communities.

3. Case Study #3: Lindbergh Station-High Density TOD at the City's Edge

3.1 Background

The Lindbergh Center is on 51 acres surrounding Georgia's Metro Atlanta Rapid Transit Authority's (MARTA) Lindbergh Station. The site will contain a mixed-use complex of 1.3 million square feet of office space, retail, shops and a movie theater; plus surrounding development of approximately 1,000 new single- and multi-family homes.

In March 1997, the Federal Transit Authority re-formulated its funding programs to allow transit agencies to develop transit-supportive uses on their properties and, in turn, use the resulting revenues to support general operations. MARTA quickly responded that same year by issuing a Request for Proposals for a transit-supportive development on the 50-acre Lindbergh Center site. Carter and Associates submitted the winning proposal. Toward the end of 1998, Bell South entered into talks to occupy the majority of the office space, looking to consolidate their workforce from over 100 local offices spread throughout the region into four 15-story office buildings within the project.

[L] John King, "Urban Landscapes: Mountain View Mall Transformed to Cozy – or Claustrophobic?" *San Francisco Chronicle* 22 April 1999, E1.

Figure 3.1: *This illustrative view for Lindbergh reveals the density of the TOD. (by Cooper Carry)*

The initial master plan was developed with input from MARTA, several neighborhood groups, and representatives from the city. The parties met every two weeks throughout 1998. However, when Bell South became involved in the process, they required that MARTA not publicize the negotiations, leaving the agency in a difficult position. Workshops at the time were going well with local citizens, but MARTA could not compromise their deal with Bell South by revealing the full extent of the development. This proved to be a problem for MARTA as residents found out about the new plans. Many of them felt misled, especially over the increase in parking caused by the amount of planned office space that would house Bell South. The parking issue became so contentious that a mediator was hired to work with MARTA and the citizens. One of the resultant products was parking maximums, an unusual step for the City of Atlanta, who normally regulate development by utilizing parking minimums. The mediation process successfully satisfied neighborhood groups with the exception of the Garden Hills Association. The Association withdrew from further negotiations and filed a lawsuit against MARTA to have the number of parking spaces reduced further than what was proposed during mediation. In November of 2000, the Supreme Court of Georgia upheld a lower court ruling that MARTA's initial reduction from 12,500 spaces to approximately 5,000 spaces was reasonable.

The reduction in parking is a step in the right direction, but by TOD standards, 5,000 parking spaces is high for a development of this size, especially due to its proximity to a transit station. Parking for retail and office was reduced by about 1/3 from the city's standards to 3.7 and 2.34 per 1,000 square feet respectively. An additional strategy for reducing overall parking employs limited use of shared parking between office and retail uses. BellSouth is also encouraging employees to ride MARTA by providing free or discounted transit passes and free private parking

at outlying MARTA stations.[M] On-site parking at Lindbergh costs $60 dollars per month, rather than being free as it would be in a typical suburban office park. Moreover, MARTA has expressed the desire to eliminate some parking as transit ridership numbers increase.[N]

This site was originally a hodgepodge of zoning designations from the 1960's and 1970's, including C-3, MF, and Industrial. The portions that were C-3 remain in the new plan, because it allows mixed-use development. The other zones were changed to a mixed-use designation to accommodate office buildings with retail on the ground floor. In terms of zoning that relates specifically to the transit stations in the remaining part of the system MARTA is still working with the city to get a Special Public Interest Zoning District applied to the site. It will be the first time an SPI is located this far out from the center city, and although it does not affect the current project, any future development would occur under this designation.

Figure 3.2: *Office buildings and Parking Garages are organized around a Central Boulevard. (Kreyling, 6)*

[M] Kelly Newmeier, "Atlanta, A City Under the Nation's Looking Glass," *Office and Commercial Real Estate Magazine*, Winter 2000: 8. Carter and Associates Website. March 16, 2001 <www.carterusa.com/aboutUS/newsArchive/2000/AtlantaLookingGlass>.

[N] Paul Vespermann, "Transit-Oriented Development at Lindbergh Center Station," Transit Conference, Atlanta 1998.

Table 3.1: Land Use Program

Land Use Type	Land Area (acres)	Under Construction (as of this writing)	Constructed Densities	Full Buildout Potential
Residential Lofts	3.0	104 du	34 du/ac	104 du
Condominiums	not available	0 du	not available	388 du
Apartments	not available	0 du	not available	566 du
Office Space	not available	0 sq. ft.	not available	2.7 million sq. ft.
Retail space	not available	0 sq. ft.	not available	330,000 sq. ft.
Hotel	not available	0 rooms	not available	190 rooms
Parking	not available	not available	not available	5,000 spaces

Source: Scott Pendergrast, MARTA.

3.2 Institutional and Implementation Tools

- **Joint Partnership between MARTA and Carter and Associates (1997):** MARTA and Carter and Associates collaborated on the development of Lindbergh through a joint partnership. MARTA contributed the land for the parking garages, while Carter and Associates carried the project through the development and construction process.

- **Livable Communities Grant:** MARTA obtained a Livable Communities Grant from a federal agency to issue a Developer Request of Proposals to construct the Lindbergh development. The winning submittal by Carter and Associates was one of two submittals received in response to the RFP.

- **Rezoning of site to TOD (1999):** The site was rezoned to TOD in 1999, after a 14-month process involving the Neighborhood Planning Unit, Zoning Review Board, and Atlanta City Council. The rezoning allowed the project to be developed in its current form, with mixed-use development centered around a mixed-use, pedestrian-friendly promenade.

Table 3.2: Project Information

When was transit in place:	❖ 1984
Project construction start date:	❖ July 2000
Current Project Status:	❖ Under Construction, to be completed 2002.
Agencies:	❖ MARTA, FTA, and The City of Atlanta
Developer:	❖ Carter and Associates: Master Developer ❖ ONCOR International and Smith Real Estate Services ❖ Federal Realty Investment Trust: Retail Developer ❖ Harold Dawson ❖ Southeast Capital Planners ❖ Post Properties: Apartments
Builder:	❖ Moody and Hardin Construction.
Design Team:	❖ Cooper Carry: Architect and Master Planner
Financing:	❖ MARTA was able to utilize monies from the sale of excess transit system properties, approximately $40 million, to finance parking structures within the project site. They expect to make a return of about 10% on their investment which will be paid back from parking fees.[O]
Major retail or office tenants:	❖ Bell South

3.3 Conclusion

Successful TOD's have to include a parking component, as there will always be a percentage of users who drive their cars. At Lindbergh it was especially important because the majority of the site was originally a surface parking lot for transit riders. MARTA's goal was to achieve a one-to-one parking replacement. New uses would only exacerbate the need for parking, particularly since new development would eliminate most of the existing spaces around the station.

[O] Rob Chambers, "MARTA's Historic New Relationship with Super-customer Bell South Is Getting a Lot of Attention, but behind That Story Is the News that MARTA Has Become an Entrepreneur," *Access Atlanta* 27 January 1999, 22 April 2001 <www.accessatlanta.com/news/business>.

As the agency also invested a substantial amount on providing infrastructure in the form of parking garages and road extensions on the site to ensure the success of the project. In the future, MARTA hopes to avoid making such investments on TOD projects. The size of Bell South's potential investment made concessions seem necessary, but in retrospect, it appears that the marketability of the area could have carried the development on its own. In the future, MARTA hopes to bring a developer on board only after first gaining an understanding of the market potential of their properties.

Finally, this case study highlights the importance of being consistent in working with the public while planning a major development project, regardless of its transit-orientation. Rather than having private meetings with Bell South during an on-going public process, MARTA might have considered putting the public process on-hold and then bringing back a set of options and a rationale for including the major Bell South office development. The path they chose almost guaranteed conflict with the community and created a level of distrust that is likely to remain for many people in the community.

4. Case Study #4: The Commons, Denver CO: The Urban TOD

4.1 Background

The Commons is a 51-acre, mixed-use project located in the Platte River Valley, an industrial area adjacent to downtown Denver, Colorado. Planning for the reuse of the area has been ongoing for about 20 years. The parcel is the largest available infill site near downtown and a highly desirable candidate for redevelopment. A part of the site contained rail yards that served the surrounding industrial uses. Vacant lands, hazardous materials contamination, and aging infrastructure make the site difficult to develop and lowered its value. It is the context of the site that creates its value.

Once completed, residents, shoppers, and office workers will have a 10-minute walk to downtown Denver and numerous other amenities. Besides the adjacent Commons Park, Coors Field, Union Station, and future connection to downtown via the 16th Street Transit Mall extension, the site is near to the LoDo District, Pepsi Center arena, The Children's Museum, Six Flags/Elitch Gardens amusement park, Colorado's Ocean Journey aquarium, several neighborhood parks, and various commercial developments that are proposed and under construction.[P]

[P] "*Denver's Center City Neighborhoods: The Central Platte Valley,"* Data Sheet, *Downtown Denver BID* 20 June 2001 <http://www.downtowndenver.com/data_cpv.htm>.

Figure 4.1: *The aerial photo reveals the proximity of the Commons site to Downtown Denver, the South Platte River, and other surrounding amenities. (Downtown Denver Partnership)*

Through the late 1980's Trillium, a development and investment company based out of Washington State with offices in Denver, acquired property that was eventually consolidated as the project area.

As parts of the Platte River Valley began to redevelop, land prices also began to increase, making remediation of the site a possibility, which Trillium undertook with the aid of EPA. Trillium recognized the potential for adding value to the site through a master plan that took advantage of the project's central location and proximity to open space, commercial, and transit amenities. The City of Denver saw similar opportunities. While the City and the Regional Transit District (RTD) have been undertaking TOD policy programs throughout the area these efforts have not focused specifically on The Commons. To the city, the project brought the potential not only to create connections between amenities, neighborhoods, and districts, but also to redevelop a blighted area and take advantage of the various projects to renovate important facilities and create open space opportunities. The project will connect to the planned renovation of Union Terminal as an intermodal facility, linking existing neighborhoods to the Platte River and Cherry Creek, and allow for the extension of the 16th Street Transit Mall to connect downtown with Union Station (the major portion of the 16th Street extension will be completed in September 2001.) The Union Station Terminal will include a station on the Central Platte Valley LRT line that is planned to open in March, 2002.

The land use entitlement process for The Commons utilized a PUD (Planned Unit District) which was developed cooperatively between Trillium and the city. The original zoning for the site was PRV, Platte River Valley Zone District. This district was intended to "promote and encourage diversified land uses and to integrate the district's unique geographic location and setting, amenities of view, transportation linkages and open space." The designation was too vague and proved ineffective for both Trillium's and the city's plans for the site. Guided by input from a community planning process,

the city required several changes to Trillium's initial plans for the site to accommodate the wishes of nearby business and residents. These changes included tripling the amount of housing and doubling the amount of open space in the project. [Q] The South Platte River Commission, a city commission charged with revitalizing the recreational and development opportunities along the river in Denver, and local citizens and business owners were part of a 23-member task force that helped shape the development of the site. Trillium met with staff often during the development of the plan, and was receptive to the city's suggestions of community input. This constant access allowed the city and Trillium to work together and meet the requirements of the Station Area Development Program.

Another aspect of the project that benefited from this close contact was the parking plan. The city placed a parking district on the site, to ensure that individual projects within the larger master planned development could take full advantage of the benefits of coordinated parking policies, including shared parking, and meeting the requirement of two spaces per 1,000 square feet of commercial development, with a cap of 8,000 spaces for all of the non-residential development. There was a focus on capping parking because the Denver Region area is designated a non-attainment area for air quality by the EPA. The PUD also requires employers to offer incentives to employees to take transit. However parking requirements for residential are not as stringent, at two spaces per unit, since the city wants to encourage residential development in the area.

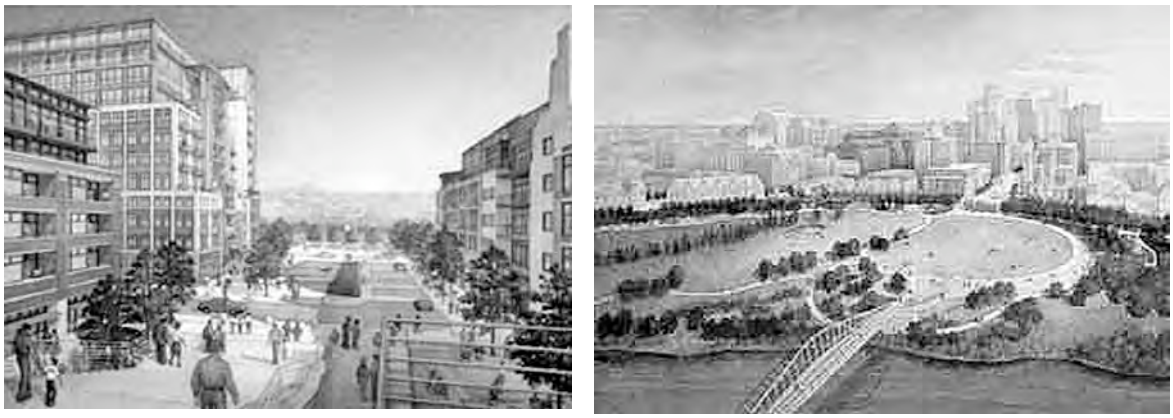

Figure 4.2: *Illustrations of the planned 16th Street Mall extension and Riverfront Park (Trillium)*

[Q] Paula Moore, "Trillium Looks for Platte Valley Partner," *Denver Business Journal* 20 February 1998, 12 April 2001 <http://denver.bcentral.com/denver/stories/1998/02/23/story1.html>.

Along with a reduction in parking, the site is also adjacent to the planned Union Station Intermodal Station. The city is currently working to purchase the station from its three owners, one of which is Trillium. The city, RTD, and DRCOG are combining their resources to purchase the property, which will be combined with adjacent property to accommodate a variety of transportation options, including the termination of the Central Platte Valley LRT Line, passenger trains, regional buses, and commuter rail, making it the "hub of Denver's metropolitan transportation system."[R]

Figure 4.3: *Union Station (Downtown Denver Partnership)*

The implementation of the master plan is facilitated by a PUD zoning designation that enforces uses and design standards that emphasize transit- and pedestrian-orientation. The PUD outlines regulations for parking, land use, design, and transportation that will result in a high degree of accessibility within the project and into surrounding areas. The planning and construction timeline extends 20 to 40 years. Trillium will sell portions of the project to individual developers who will construct different components.

All of the planning efforts have culminated in several large parcel sales, most of which are now owned by East West Partners, who are constructing several loft buildings that should be open in spring of 2002.

- **Park Place** -- This 7-story, 71-unit loft project will be located on the northeast side of 16th. The units will boast 10-foot ceilings, include 700 to 4,000 square feet of space and cost roughly $200,000 to $2 million.

[R] "Denver's Center City Neighborhoods: The Central Platte Valley," Data Sheet, *Downtown Denver BID* 20 June 2001 <http://www.downtowndenver.com/data_cpv.htm>.

- **Promenade Lofts** -- Located across the street from Park Place, this building will include 58 units of 850 to 4,000 square feet. It also will stand 7 stories tall. Prices will be comparable to Park Place's.

- **Riverfront Tower** -- This 53-unit high rise, situated next door to the Promenade Lofts, will be something of a loft-condominium hybrid but lean more toward the condo concept. The 13-story structure will feature lower ceilings and less open, more finished space than its neighboring lofts. The tower's larger, 1,200- to 5,000-square-foot units will cost around $350,000 to $2.5 million. [S]

The first commercial building on the site by Legacy Partners, is in the site plan approvals process. Judging from the strong downtown real estate market, the office space should be leased quickly. Groundbreaking has occurred on the extension of the major roads through the site, and the 30-acre Commons Park has been finished.

Table 4.1: Land Use Program

Land Use Type	Land Area (acres)	Under Construction (as of this writing)	Constructed Densities	Full Buildout Potential
Residential	n/a	455 du.	n/a	2,000 du
Office	n/a	285,000 sq. ft.	n/a	3.7 million sq. ft.
Retail	n/a	0 sq. ft.	n/a	550,000 sq. ft.

Sources: The Commons PUD, Downtown Denver Partnership Website.

[S] Moore, "Riverfront Park."

4.2 Institutional/Implementation Tools

- **City of Denver LRT Station Area Development Program (1995):** The intent of this program is "to encourage a mix of uses and activities near Light Rail stations, which will serve Light Rail users, visitors, area workers, and residents. A mix of uses is an essential element necessary to encourage Light Rail ridership, maximizing rail investment and area revitalization".

- **The South River Corridor Project (1996):** In 1995 the Mayor of Denver created the South Platte River Commission by Executive Order. The Commission includes representatives from city, state and federal agencies, city council, and neighborhood, non profit and private river interests. The goals of the Commission were to establish policies and programs to support improvements to the water and general habitat quality of the river, provision of recreation and education opportunities, and reinforcing the river as a part of the city's quality of life. This focus on revitalization of the river corridor has in turn provided support to redevelopment efforts adjacent to it, including The Commons.

- **PUD Zoning of Site (1997):** The City and Trillium worked together with the public and area stakeholders to rezone the property from PRV, a zoning classification that proved ineffective for Trillium's development plans. The PUD zoning is currently guiding the implementation of the project.

While not affecting the development of the PUD zoning of the site, the following planning effort will shape the longer term implementation of the project

- **City of Denver Comprehensive Plan (2000):** Ensures that Denver's Citywide Land Use and Transportation Plan and regulatory system support the development of a clean, efficient and innovative transportation system that meets Denver's future economic and mobility needs. Encourages mixed-use, Transit-Oriented Development that makes effective use of existing and expanding transportation infrastructure, supports transit stations, increases transit patronage, reduces impact on the environment, and encourages vibrant urban centers and neighborhoods.

Table 4.2: Project Information

When will transit be in place:	❖ March 2002
Project construction start date:	❖ 1997
Current Project Status:	❖ Extension of major roads and several 12-story condominium towers are under construction.
Agencies:	❖ RTD, City and County of Denver, DRCOG
Developer:	❖ Trillium Corporation
Builder:	❖ East West Partners: Riverfront Park lofts and Condominiums ❖ Greystar Capital Partners: Basset Street Residences, 350 du in 4 buildings ❖ Archstone Communities: 750 apartment units ❖ Legacy Partners: Offices
Design Team:	❖ Design Workshop: Master Plan ❖ Urban Design Group with East West Partners: lofts ❖ Merriman Associates Architects: Basset Street Residences ❖ Klipp Colussy Jenks DuBois Architects: Legacy Partners office building

4.3 Conclusion

The Commons is a developer-driven TOD involving a high-degree of risk at a relatively large scale in terms of acreage and investment. As such, the project can inform us of the "real" market for TODs and will continue to do so as it is built and sold. It is clear that Trillium recognized the potential for its transit and pedestrian connections as amenities, and created a street and block system and building guidelines that build on this resource. The emphasis on pedestrian and transit connections is an important part of what makes the project an attractive investment as well as an attractive place to live and work.

The Commons was planned in an environment of cooperation between Trillium and the City. The City's vision for the South Platte River Valley coincided with Trillium's goals of maximizing marketable development opportunities within the site. The recognition that cooperation was necessary allowed both Trillium and the City to achieve mutual goals. For example, by encouraging more housing, the City achieves a diversity of use within the greater downtown area that it desires while Trillium was able to gain broader community support for the project.

Yet, certain specific elements of the project would not have been possible without public/private cooperation. One example of the city and the developer working together is in the implementation of shared parking. The change in zoning from PRV to PUD allowed for the creation of a parking

district that will consolidate parking facilities freeing the individual developers from having to construct all parking on-site. In conjunction with parking maximums, shared parking will create an environment that limits the presence of the automobile and opens opportunities for alternative modes of travel to become equal if not dominant. In turn, these parking strategies attract developers by freeing up larger areas for revenue-generating development.

Another variant from many TOD projects is that the private developer is now negotiating to sell the area's major transit facility, Union Station, to the City and transit agency; rather than the transit agency selling or leasing land to a developer.

While TOD policies and directives were being developed by the City, RTD and DRCOG, policies had little influence over its design. However, The Commons has helped to build public and private support for and interest in TODs at other locations. If the build-out of The Commons is successful, this should help create further support for TOD throughout the region.

Finally, The Commons is an important case study because it illustrates that the definition of TOD needs to be flexible. The interest of Trillium in the project area preceded much of the discussion of opportunities for TOD in the region, and the development has been driven by a strong real estate market, available infrastructure, good location in relation to downtown and other redevelopment projects, etc. In some ways, The Commons has "grown into being a TOD" as the development concept has matured along with Denver's policy and public understanding of the potential for TOD.

5. *Case Study #5: Barrio Logan Neighborhood TOD Infill and Revitalization*

5.1 Background

The Barrio Logan Neighborhood in San Diego, California, provides a case study in urban infill and revitalization of a Latino community. The revitalization of the neighborhood, which is within easy walking distance of a San Diego light rail trolley station, has focused on the development of affordable housing and new commercial activity, more than on purposefully encouraging transit use. The projects discussed below have had to overcome, or are still working to overcome, the hurdles and developer and lender prejudices that go along with the economic and social context of the community. The lack of a "desirable" market in the eyes of conventional development has created difficult barriers to urban revitalization, missing the opportunity presented by the light rail station to create a vital, minority community with a high level of accessibility. The situation has however, rallied neighborhood residents to proactively rebuild their community.

5.2 History and Planning Context

In the 1940's and 50's, the Barrio Logan neighborhood was a thriving center of activity. It was the second-largest Mexican-American neighborhood in California, with over 20,000 residents. The community was drastically changed by a series of events that took place over the next thirty years. In the mid-1950's, due to the neighborhood's proximity to the port area, the City of San Diego changed the zoning designation, which was predominantly residential, to include industrial M-1 and M-2 designations allowing incompatible industrial uses to move in near existing homes.

Then, in 1963, Barrio Logan became separated from the rest of the greater Logan Heights neighborhood by the construction of the elevated I-5 Freeway. The one-half mile by three-mile land area that comprised the Barrio Logan neighborhood was now wedged between the freeway and the Port of San Diego. The construction of the Coronado Bridge in 1969 exacerbated the separation with its soaring, two hundred-foot presence above the single-family homes and businesses in the neighborhood. At the time of the opening of the bridge, the population of Barrio Logan had dropped to just 5,000; the separation from the rest of the community was taking its toll.

The changes in the neighborhood finally encouraged frustrated residents to mobilize. When the city reneged on a promise to designate land beneath the freeway for a community park, residents responded by lying in front of bulldozers being used to start construction of a California Highway Patrol facility. Escalating acts of protest eventually forced the city and state to keep their promise. The site is now Chicano Park, with its world-famous murals.[T] Community activists were involved throughout the 1970's in improving the condition of Barrio Logan.

Figure 5.1: *The murals of Chicano Park reflect the history of the neighborhood and its people. This mural is a tribute to community activist, Laura Rodriguez, who was the driving force behind the establishment of a neighborhood community health center.*[U]

In 1970, residents of the Barrio Logan Neighborhood saw an opportunity to take positive steps toward the revitalization of their neighborhood by actively participating in the California Local Coastal Plan Review. Through this program, the state provided resources to develop new land use

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[T] "Mercado Apartments," *The Urban Land Institute Project Reference File* 28.15 (1998).

[U] "Plain Talk, The Story of a Community-Based Strategy to Reduce Teen Pregnancy. Part I-Empowering Communities," *The Annie E. Casey Foundation* 25 June 2001 <http://www.aecf.org/publications/plaintalk/p1-sandiego.htm>.

plans for the improvement of blighted coastal areas. Residents responded in force by attending meetings of the City Council and Planning Commission, both the local and regional Coastal Commissions, and those of the Port District, and successfully pushed for their community to be included in the process. The process lasted from the early 1970's to December 12, 1979. It was made more difficult and time consuming by the fact that the neighborhood lay within a zone involving five separate jurisdictions. However, the dedication of the residents paid off and in 1978 a revitalization plan was presented for the Barrio Logan Neighborhood. In spite of this, and the subsequent opening of the Barrio Logan Trolley Stop three years later, the plan did not start being implemented until the Environmental Health Coalition (EHC) and the Metropolitan Area Advisory Committee on Anti-Poverty (MAAC) became actively involved.

By 1990, the population of Barrio Logan had increased to 13,488, with 44% of its residents living below the poverty level. This was the state of the area when MAAC and EHC entered in 1991 to work with the city and neighborhood residents on a plan to build affordable housing, which resulted in the Mercado Apartments.

5.3 The Mercado Apartments

In December 1992, the site for the apartments was purchased by MAAC and the community involvement that characterized the rest of the project continued in earnest. During the design phase of the project, the development team met with local business associations, social groups, and community planning committees to identify neighborhood goals, needs, and aspirations for future growth. During this phase, it became "apparent that the residents felt that the earlier loss of housing had robbed the community of its vitality and identity. It was not enough simply to replace the housing; Mercado had to be 'more than housing.'". [V] The project architect also held several meetings with potential residents to ensure that the designs reflected their particular needs and desires. The units were the first in a series of planned revitalization projects, including a commercial component.

The result of this process is a colorful, pedestrian-oriented project, with parking located at the center of the complex. The Mercado Apartments is a 144-unit complex and the first new housing construction that has occurred in the neighborhood in nearly fifty years. The site plan and unit design allow for a high level of self-policing by residents, as active building spaces front onto surrounding streets and internal parking areas. The units are clustered around courtyards that provide space for informal gatherings and play areas for children. Although the development is not as dense as desired by the City's TOD Guidelines, at 32 units to the acre, it is quite dense for a project with surface parking. Maximizing density without structured parking was a key factor to keeping costs down and units affordable. A cost of just $86,000 per unit makes the Mercado Apartments one of the least expensive residential tax credit projects in the state. Their attractiveness is a testament to the diligence of MAAC, the architect, and the many citizens involved in the process. The complex opened in August 1994 and the waiting list for housing remains extremely long.

[V] "Plain Talk, The Story of a Community-Based Strategy to Reduce Teen Pregnancy. Part I-Empowering Communities," *The Annie E. Casey Foundation* 25 June 2001 <http://www.aecf.org/publications/plaintalk/p1-sandiego.htm>.

Figure 5.2: *Mercado Apartments.*

5.4 Mercado del Barrio

To date, the commercial component of the project has not met with the same success as the housing portion. The planned 100,000 square foot Mercado del Barrio will be located within walking distance of the Mercado Apartments and on the way to the trolley stop. A grocery store catering to the Mexican community is proposed as an anchor for the retail center, which is projected to provide between 200 to 300 jobs for the local community. Currently, the nearest grocery store is over three miles away. Groundbreaking for the project is currently scheduled for October 2001.

As it stands now, plans for the shopping center are more auto-oriented than transit-oriented because of the perceived low purchasing power of area residents. Parking is planned at about 3.5 spaces per 1,000 sq. ft., while the city's TOD Guidelines would allow 2 per 1,000 sq. ft.. Retail entries are oriented to the parking lot rather than street frontages, although shop owners will have an option to have entries off the street as well. The project has been complicated by concerns from the financial community regarding the "measurable" viability of the future retail uses and the lack of clarity in land use regulations given the current implementation status of the "City of Villages" zoning ordinance language. This is unfortunate as the potential to link the Mercado Apartments and other homes with the trolley stop, via a lively retail complex, has been compromised by the need to overcome the many barriers to attracting development into the area.

5.5 Other Development in the Neighborhood

The entire 133-acre Barrio Logan Redevelopment Area houses nearly 13,500 people with residential development at a gross density of over 7 units to the acre. While this is not at the City's desired Urban TOD density of 15 units to the acre, many of the residents are transit-dependent. In addition to the Mercado Apartments and the Mercado del Barrio retail development, the corridor

between them and the trolley station is experiencing some additional development, such as a new building to relocate a landmark neighborhood restaurant.

While the neighborhood holds much promise as an exemplary urban TOD, affecting strong pedestrian-friendly, Transit-Oriented Development has been difficult, because the city's 1990 TOD guidelines are currently optional. New zoning has been developed through the "City of Villages" process, but the zoning does not go into affect until community plans are updated. This has yet to occur in Barrio Logan.

Table 5.1: Land Use Program

Land Use Type	Land Area (acres)	Under Construction (as of this writing)	Constructed Densities	Full Buildout Potential
Residential	4.4 acres	144 units	32.7 du/ac	144 units
Retail	6.5 acres	0 sq. ft.	0.35 FAR	100,000 sq. ft.

Note: Non-Residential uses are calculated using FAR, and residential uses are calculated using du/ac.

Source: ULI Case Study.

5.6 Institutional and Implementation Tools

- **City Redevelopment Tools:** Because Barrio Logan is a designated as a redevelopment area, the city now can reinvest the increase in property tax revenues resulting from redevelopment back into the community. The city also is able to obtain federal grants for needed street improvements, and grants and loans to acquire property for redevelopment. Redevelopment incentives include site assembly, fee reductions, permitting assistance, off-site improvements, and low/moderate income housing grants/loans. The city has aided in securing funding for both the Mercado Apartments and the Mercado Del Barrio Project.

- **Barrio Logan Emerging Brownfields Pilot Project:** The project is funded by a grant from the EPA. The goals of the project are to conduct site investigations on identified metal plating or chemical storage facilities, make recommendations on remediation alternatives, develop a financial incentive package for identified businesses, and pursue grant opportunities to continue the remediation and/or relocation efforts. Sites of potential contamination within the neighborhood have been identified, and preliminary investigations have been completed.

- **City of San Diego's Enterprise Community Initiative:** The federal program provides tax incentives, performance grants, and loans to create jobs and business opportunities. It focuses on activities to support people looking for work—job training, child care, and transportation. This initiative is unique because residents in the designated neighborhoods decide what happens in their neighborhoods instead of government officials. The local initiative bolsters the federal one with a strategic plan to incorporate its principles into locally developed priorities and goals related to comprehensive revitalization. Barrio Logan is one of several economically disadvantaged neighborhoods in San Diego receiving the opportunities.

- **City of San Diego Policies:** The city has formally adopted a policy endorsing Transit-Oriented Development in their 2000 General Plan. But the Transit-Oriented Development Guidelines form 1992, have not been fully adopted. At this point they remain an optional alternative. The City has prepared new zoning language that supports mixed-use TODs but it cannot be put into effect until community plans are updated. This has yet to occur in Barrio Logan.

5.7 Financing

5.7.1 The Mercado Apartments[W]

The project was a complex mix of public, private and non-profit financing which amounted to approximately $12.3 million for the Mercado Apartments. In all, a variety of agencies, and for- and non-profit entities were involved. The private share of the financing amounted to approximately 71% of project costs while the public share came to 29% of costs. A few of the contributing entities and programs included:

- Bank of America: $2.8 million (30 year loan at 8.75% interest)
- Federal Home Loan Bank: $800,000 (40 year loan at 3% interest)
- Affordable Housing Program Tax Credits: 5.1 million, Equity investment.
- SD Housing Commission/Trust Fund: $1.425 million (30 year loan, 6% residual receipts, forgivable on sale)
- San Diego Redevelopment Agency/Centre City: $1,966,200 land write-down subsidy
- City of San Diego: $161,000 Development Fee Referral
- San Diego Housing Commission: $1.4 million from Housing Trust Fund and $1.1 million as a long-term silent second mortgage
- LISC California Equity Fund: syndication of affordable housing tax credits, which raised $5 million for the project.

5.7.2 Mercado del Barrio

The financing for the retail component remains in process so amounts are not known at this time.

[W] "Mercado Apartments," *The Urban Land Institute Project Reference File* 28.15 (1998).

Table 5.2: Project Information: Mercado Apartments

When was transit in place:	❖ 1981
Project construction start date:	❖ 1997
Current Project Status:	❖ 144 apartment units completed.
Agencies:	❖ MAAC, City of San Diego, EPA.
Developer:	❖ Metropolitan Area Advisory Committee On Anti-Poverty (MAAC): Non-Profit Developer
Design Team:	❖ Architects: Rodriguez-Simon Design ❖ Civil Engineer: RBF/Sholders & Sanford ❖ Landscape Architect: Estrada Land Planning ❖ Financial Consultant: Devine and Gong ❖ Legal Services: Sullivan, Cummins, Wertz, McDade & Wallace, and Riordian and McKinzie

Table 5.3: Project Information: Mercado Del Barrio

When was transit in place:	❖ 1981
Project construction start date:	❖ Planning to break ground in October 2001
Current Project Status:	❖ Planning stages
Agencies:	❖ MAAC, City of San Diego.
Developer:	❖ Land Grant Development ❖ Metropolitan Area Advisory Committee On Anti-Poverty (MAAC): Non-Profit Developer ❖ Richard Juarez: Investor, and Part-Owner of Mercado Del Sol
Retail:	❖ The project will be anchored by Mercado Del Sol, a Mexican Market.

5.8 Conclusion

Although Barrio Logan is largely a revitalization success story, studies have found that transit does play a part in the life of residents. According to a study performed by Cervero and Bernick on the mode choice of Mercado Apartment residents, a lack of pedestrian amenities between the complex and the Barrio Logan trolley stop has not deterred them from using transit. The study discovered that one in seven trips by Mercado residents are made by trolley. This number is

significant when one considers that 90% of Mercado's residents have access to an automobile.[X] The proposed commercial component of the project is located between the apartments and the trolley stop and so will improve accessibility to services for area residents, even if it's site and building design are less than ideal from a transit- and pedestrian-friendly stand point.

For the most part, however, TOD policies adopted by the City of San Diego have not played a major role in the revitalization of the neighborhood. This is unfortunate considering that Barrio Logan is located only one stop out of downtown, and that its lower-income population has much to gain from high quality transit access.

A major impediment to the implementation of Transit-Oriented Development concepts in lower income communities is that the design requirements for good TOD are seen as only an additional cost and barrier to achieving economic change. The economic and social benefits that come from TOD given lower auto use, a more compact development pattern, and the potential for higher return from mixed-use development need to be communicated to the development industry and the community in general.

Finally, the Barrio Logan case study demonstrates how valuable non-profit groups can be as allies in revitalization efforts. Cities and communities should take advantage of the energy and knowledge of non-profit social services, housing, and community development organizations to assist in the implementation of TOD. Many of these groups have become extremely adept at juggling financing tools and strategizing neighborhood revitalization plans to successfully implement projects. Harnessing their experience and dedication to aid disadvantaged neighborhoods need not be limited to housing development, but can encompass mixed-use development, job creation, social services assistance, and neighborhood improvement and advocacy. Another advantage they can bring to these projects is a high level of local knowledge; they are typically strongly committed to the neighborhood and can have built-up a high level of trust amongst local stakeholders.

[X] Cervero and Bernick 43.

IV. Model Transit-Oriented District Overlay Zoning Ordinance

1. Purpose and Intent

The purpose of the Transit-Oriented District is to encourage an appropriate mixture and density of activity around transit stations to increase ridership along the Central Phoenix/East Valley CP/EV light rail corridor and promote alternative modes of transportation to the automobile. The consequent intent is to decrease auto-dependency, and mitigate the effects of congestion and pollution. These regulations seek to achieve this by providing a pedestrian-, bicycle-, and transit-supportive environment configured in a compact pattern and a complementary mix of land uses all within a comfortable walking and bicycling distance from light rail stations.

Transit-Oriented Development often occurs as infill and reuse within areas of existing development. The regulations within this ordinance vary in some cases from other ordinances related to infill development in the City, because of the additional need to support transit ridership.

The specific objectives of this district are to:

- Encourage people to walk, ride a bicycle or use transit;
- Allow for a mix of uses to create an environment that engages people at the pedestrian scale;
- Achieve a compact pattern of development that is more conducive to walking and bicycling;
- Provide a high level of amenities that create a comfortable environment for pedestrians, bicyclists, and other users;
- Maintain an adequate level of parking and access for automobiles;
- Create fine-grained detail in architectural and urban form that provides interest and complexity at the level of the pedestrian and bicyclist;
- Encourage uses that allow round-the-clock activity around transit stations;
- Provide sufficient density of employees, residents and recreational users to support transit; and,
- Generate a relatively high percentage of trips serviceable by transit.

The overlay is, as it is called, a model which cities can use to tailor to their own specific needs and procedures. It cannot be emphasized enough that jurisdictions should carefully consider how

they adapt the model ordinance to their specific circumstances. The usual precautions should be followed to assure that the ordinance and other regulatory and policy documents (including the code) are in accord with each other (whether it means adjusting the ordinance or revising other documents); that the public is included in the process; and that legal counsel is part of the process.

This section is organized much like a typical zoning district is organized within an ordinance. Much of the content was derived from similar ordinances and documents that define TOD development in jurisdictions much like those in the Valley Region, as well as current ordinances from Tempe, Phoenix, and Mesa. This will facilitate its modification and incorporation into the cities' current ordinances, but does not allow for detailed discussions of the concepts and issues behind the standards defined by the model ordinance. For this, jurisdictions should use the specific references to end notes, which are located in *Chapter V. Discussion of TOD Decision Points,* for the rationale behind the standards.

2. Definitions

These definitions shall apply only to the Transit-Oriented District Overlay District.

Accessory Dwelling – units that are "secondary" or subordinate to the primary residence and situated on the same lot as the primary residence.

Accessway – a formalized path, walkway, or other physical connection that allows pedestrians to efficiently reach destinations.

Arcade – a covered walkway attached to a building and supported on the sides not attached to the building by columns.

Articulation – the visible expression of architectural or landscape elements through form, structure, or materials that "break up" the scale of buildings and spaces to achieve a "human scale."

Balcony – an exterior platform that projects from or into the façade of a building and is surrounded by a railing, balustrade, or parapet**.**

Balustrade – a handrail and the row of posts that support it.

Bay Window – a large window or grouping of windows projecting from the outer façade of a building and forming an alcove in the interior of the building**.**

Berm – an artificial bank of earth. Berms can physically and visually separate areas and provide visual and physical level changes by raising landscape elements above grade.

Bulk Retail Use or Bulk Sales – a retail or wholesale facility that serves the general public, selling primarily institutional sized or multi-pack products in bulk quantities.

Build-to Line – a given distance from a property line where the façade of the building within that property must be located.

Clear Window – the amount of glass surface of a window that allows 100% visual permeability**.**

Commercial Parking Facility – a parking structure or a surface parking lot operated for profit that has parking spaces that are not accessory to a primary use. This term does not include a park-and-ride lot.

Compact Development – the planning concept of using site design and urban design techniques to decrease the amount of land needed to develop a given amount of land use. In the case of TOD, this is done with the goal of improving transit access.

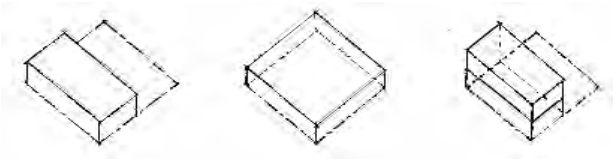
Density – a unit of measurement that divides persons, floor area, or dwelling units per the gross or net measurement of a discreet area e.g., acres, square feet, square miles. Density requirements in this document are expressed as gross densities with the land area including the area of the parcel, specific to the use including its yard and any parking provided, plus the area of one-half of the street right-of-way upon which the parcel fronts.

Drive-Through Facility – facilities allowing transactions for goods or services without leaving a motor vehicle.

Fast Food Establishment – a food service business that offers relatively immediate service of semi-prepared or prepared foods for take-out or in-house consumption in disposable containers and serving walk-in and/or drive-through customers.

Finished Floor – the ultimate grade at which a structural floor will be constructed including added decorative and finished surfaces**.**

Floor Area Ratio (FAR) – the amount of enclosed gross floor area in relation to the amount of site area. For example, a floor area ratio of 0.5 is equal to one square foot of floor area for every two square feet of site area.



0.5 FAR *1.0 FAR* *1.0 FAR*

Frontage – the linear edge of a property adjacent to the property line abutting a street, public right-of-way.

Gradient – the change in density, height, and/or land use occurring in stages, degrees, or even and continuous change**.**

Greenway – a singular or a series of vegetative, linear corridors, natural or man-made, which may contain active or passive recreational uses or which may prohibit human activity altogether in order to preserve sensitive areas. These are usually associated with riparian systems, but may also include transportation corridors.

Human Scale – the size and proportion of a physical element that closely relates to the human body e.g., a 16 foot lamp post vs. a 30 foot lamp post, and a façade with vertically oriented framed windows vs. a façade with a continuous and unarticulated window wall.

Interior of Lot – the area within a parcel that does not contain a side which is adjacent to a public or private right-of-way for an accessway or street.

Light Rail Transit (LRT) – a fixed guideway transit system that can operate on a variety of rights-of-way ranging from on-street to grade separated.

Live-Work – a residential unit that is also used for commercial purposes for a time, with minimum of 50% of the total building area given to the commercial use within the same structure as the residential component.

Loggia – a roofed, but open gallery or arcade along the front or side of a building on an upper story.

Lot Coverage – Areas of a lot or parcel covered by buildings (as defined by foundation perimeters) and other structures with surfaces greater than 36 inches above the finished and natural grade.

Major Pedestrian Route – the primary route or space used by "Pedestrians" as defined in this section**.**

Mixed-Use – Development contained within a single-parcel (horizontally or vertically) or adjacent parcels that contains different uses that are complementary to each other and provide activity throughout the day.

Opaque – not transparent**.**

Open Space – a private or public open land area that is currently undeveloped; it may be maintained as open space into the future or it could be developed**.**

Overhang – the part of a building that extends horizontally beyond the wall.

Parking Structure – a parking garage located above ground or underground consisting of one or more levels, not surface parking.

Park-and-Ride Lot – A parking structure or surface parking lot intended primarily for use by persons riding transit or carpooling, and that is owned or operated either by a transit agency or by another entity with the concurrence of the transit agency.

Parking, Off-Street – formal or informal parking located within a parcel and outside a private or public right-of-way.

Parking, On-Street – formal or informal parking located within a private or public right-of-way and outside of a parcel.

Partial Destruction – (this definition should conform with that of the individual jurisdiction).

Pedestrian – for the purposes of this Overlay Ordinance a pedestrian means people who walk, sit, stand, or use a wheelchair in public spaces, be they children, teens, adults, elderly, people with disabilities, workers, residents, shoppers or people watchers, etc.

Pedestrian Activity – the congregation of persons in an area whose primary means of transportation is by foot.

Pedestrian-oriented Design (PeD) – The design of communities, neighborhoods, streetscapes, sites, and buildings that emphasizes pedestrian access, comfort, and visual interest. Transit-Oriented Design is a particular type of PeD that includes design and intensity of land use to support transit in addition to pedestrians.

Pedestrian Way – a linear space or an area where the primary users are pedestrians and that may also accommodate bicyclists**.**

Pergola – an arbor or passageway with a roof or trelliswork on which climbing plants can be trained to grow**.**

***Portico* –** a porch or walkway with a roof supported by columns, often leading to the entrance of a building**.**

***Porch* –** an open or enclosed gallery or room attached to the outside of a building, typically serving as a semi-public space prior to a building entry**.**

***Primary Front Façade* –** the façade of a building that is meant to take importance over the remaining façades of a building, typically fronting onto a public or private street or pedestrian accessway**.**

***Setback* –** the distance between the building façade and the property line of the parcel in which the building is located.

***Shared Parking* –** parking that is utilized by two or more uses taking into account the variable peak demand times of each use; the uses can be located on more than one parcel.

***Station Area* –** the core area of the TOD within closest proximity of the transit platform e.g., within 300 to 500 feet of the platform. (See *Section 2* in *Chapter V. Discussion of TOD Decision Points*.)

***Street-Facing* –** the façade of a building that is adjacent to a public or private right-of-way.

Telecom Hotel – a structure containing high-tech equipment often supporting remote users thus requiring low employment to floor area ratios resulting in little activity in the surrounding area. The need for accommodating few persons and the need to protect equipment from heat and light often precludes the need for windows and architectural interest, and thus the use can be housed in nondescript structures that are not pedestrian-friendly.

Transit-Oriented Development (TOD) – a development pattern characterized by a mix of uses surrounding a transit platform where streets have a high level of connectivity, blocks are small, and streetscape, buildings, and uses cater to the pedestrian.

***Transit Platform* –** A designated transit loading and waiting area as assigned by the public transit agency.

***Transit Station* –** the area including the platform which supports transit usage and that is owned by the transit authority.

***Transit Street* –** a street that contains s transit line**.**

***Transparent* –** a surface which allows objects on the other side to be easily seen.

***Trellis* –** a light framework of horizontal and vertical members that can be freestanding or attached to a building often supporting climbing plants.

***Visual Permeability* –** the ability of vertical surfaces to allow viewers to see through to the other side e.g., windows and open fencing. (See also "Transparent.")

Walking Radius – the distance beyond a central point from which a person is willing to walk. This distance will vary depending on existing barriers, the walking environment, and the availability of destinations. (See *Section 2.1* in *Chapter V. Discussion of TOD Decision Points*.)

3. Applicability and General Provisions

The City of **[insert jurisdiction]**'s Transit-Oriented Development Overlay District(s) (TOD) shall apply to lands delineated[1] on the City's official zoning map as adopted on **[insert date]** and generally within a 2,000 foot walking radius (or distance) of a light rail transit platform.[2] All land uses and development including, but not limited to buildings, drives, parking areas, landscaping, streets, alleys, greenways, and pedestrian/bicycle ways designated to be within this district, shall be located and developed in accordance with the following provisions. The standards of the TOD shall not apply to development for which approval was granted prior to the adoption of these regulations and for development for which the City has issued building permits.

4. Inconsistencies of Underlying Districts

In the event that the underlying zoning district standards, or other ordinance or regulations are inconsistent with these Overlay Zoning Ordinance standards or any other provisions herein, the TOD standards shall control within the specific TOD district.

5. Permitted Uses[3]

For properties within the Transit-Oriented Development Overlay District the following uses are permitted:

Table 5: Permitted Uses [A]

	Underlying Land Use Designation					
	Retail	Office	Industrial	Mixed-Use	Res. > 7 du/ac	Res. < 7 du/ac
Retail/Commercial						
Convenience Retail	P	P	P	P	C	C
Retail and Service Uses[4]	P	P	P	P	P	C
Bookstores	P	P	P	P	C	C
Food and Beverage Sales	P	P	P	P	C	C
Dry Cleaners	P	P	P	P	C	C
Video stores (Rental and Sales)	P	P	P	P	C	C
Hotel or Motel Lodging	P	P	P	P	C	C
Lodging limited Bed and Breakfast Inn	P	P	P	P	P	P
Mixed-Use[5]						
Live-Work	P	P	P	P	P	P
Mixed-Use	P	P	P	P	C	C
Office						
Professional Offices	P	P	P	P	P	C
Other Offices	P	P	P	P	C	C
Civic						
Day Care Facilities	P	P	P	P	P	P
Post Offices	C	C	C	C	C	C
Schools & Community Buildings	C	C	C	C	P	P
Government Offices	P	P	P	P	C	C
Hospitals/Clinics	P	P	P	P	C	C
Sports Facilities	C	C	C	C	C	C
Residential[6]						
Single-Family Detached	P[B]	P[B]	P[B]	P[B]	P[B]	P[C]
Single-Family Attached	P	P	P	P	P	P[C]
Condominiums/Apartments	P	P	P	P	P	P[C]
Accessory Units	P	P	P	P	P[D]	P[D]

[A] Note that some uses are conditional depending upon the underlying zoning type. Permitted uses are marked with a "P" and conditional uses are marked with a "C"

[B] Permitted at greater than or equal to 8 du/ac

[C] Permitted at between or equal to 6 to 12 du/ac

[D] Accessory Units permitted only with detached and attached single-family dwelling units.

6. Prohibited Uses[7]

For property within the Transit-Oriented Development Overlay District the following uses are prohibited:

- Boat dealers, resellers, repair, and leasing
- Bulk retail and wholesale uses including building materials, food and beverage sales, restaurant suppliers, etc.
- Car washes
- Cemeteries
- Cold Storage Plants
- Commercial Equipment and Construction Equipment, Sales, Service and Rental of
- Drive-in Businesses
- Exterior Display of Goods and Exterior Storage[8]
- Funeral Homes and Mortuaries
- Gas Station accessory uses such as mini-marts, convenience food and sundries sales
- Golf Courses including miniature golf courses
- Grocery stores with building footprints over 50,000 square feet.[9]
- Heavy Commercial Services
- Heating Fuel Sales
- Junk Yards and Motor Vehicle Wrecking Yards
- Kennels, excluding those accessory to veterinary clinics
- Manufactured Home sale
- Motorized vehicles dealers, resellers, repair, leasing, service stations, including oil and lubrication services, tire and muffler installation and service, body shops, or other motor vehicle services, but excluding retail or wholesale outlets selling motor vehicle parts and accessories without provision for on-site installation
- Nurseries or Greenhouses
- RV Parks or Mobile Home Parks and campgrounds
- Solid waste transfer stations

- "Telecom Hotels"
- Towing services
- Truck stops and Uses Related to Trucking excluding loading and unloading for permitted commercial uses
- Uses that require building footprints over **[insert building footprint maximum area desired by jurisdiction, could vary by distance from transit platform and existing station area context, authors of this Model Overlay Ordinance recommend 30,000]** sq. ft.[10] with the exception of Civic Uses and Sports Facilities.
- Warehouses, Mini-Warehouses, Storage Facilities, and Mini-Storage Facilities (Indoor and Outdoor)

7. Uses Requiring Conditional Use or Use Permit[11]

For property within the TOD Overlay District the following uses are considered uses that are conditional and that require Use Permits; also, see Table 5 in this chapter for uses that are conditional in specific underlying zones. Conditional uses are subject to Section **[insert appropriate section on Special Permit or Use Permit from city's ordinance]**.

- Civic Uses (See Table 5 in this chapter for definition of permitted civic uses.)
- Drive-through facilities[12]
- Fast-Food establishments (See *Section 12* in *Chapter V. Discussion of TOD Decision Points* for conditions and restrictions.)
- Gas stations[13]
- Grocery Stores
- Light Industrial with a minimum of 25 to 50 employees per acre[14]
- Outdoor recreational uses[15]
- Parking Facilities (Commercial) or Principal Use Parking (Structured or Surface)[16]
- Sports Facilities

8. Non-Conforming Uses

Non-Conforming uses shall be those uses deemed to be Prohibited Uses within this overlay district and its underlying district, but lawfully in existence prior to the adoption of this

ordinance. Because such uses are not considered to be transit-oriented uses, future expansions, rebuilding, repair and reconstruction, abandonment and change in use shall be limited by the regulations outlined in **[insert appropriate Non-Conforming section, chapter, etc. from city's ordinance].**

9. Affordable Housing Provision

The provision of affordable housing within TOD areas shall conform to regulations as set out in Section **[insert appropriate section(s) within city ordinance]**.[17]

10. Development Standards for Permitted Uses

10.1 Setbacks and Build-To Lines[18]

10.1.1 Setbacks and Build-to Lines for Non-Residential and Mixed-Uses

The following standards shall apply to new non-residential and mixed-use development within the TOD Overlay District.

Table 10.1.1: Non-Residential & Mixed-Use Setbacks and Build-to Lines

Distance from Station	Max. Building Setback
0 – 500 feet	0 feet
500 – 1000 feet	0 to 6 feet
1000 – 2000 feet	0 to 12 feet

Where ground level retail uses are present, setback may be increased up to 12 feet for outdoor seating or sales (e.g. produce display).

Features such as overhangs, porticos, balconies, loggias, arcades, covered (non-enclosed) bicycle parking, pergolas, and similar architectural features placed on the front (street-facing) side of the building are allowed within the setback.

10.1.2 Setbacks and Build-to Lines for Residential Uses

The following standards shall apply to new residential development within the TOD Overlay District.

Table 10.1.2: Residential Setbacks and Build-to Lines

Distance from Station	Max. Building Setback
0 – 500 feet	0 to 8 feet
500 – 1000 feet	0 to 12 feet
1000 – 2000 feet	8 to 18 feet

Features such as front porches, overhangs, porticos, balconies, loggias, arcades, covered (non-enclosed) bicycle parking, pergolas, and similar architectural features placed on the front (street-facing) side of the building are allowed within the setback.

10.2 Density, Area, Building, and Yard Regulations

10.2.1 Density[19]

10.2.1.1 Densities for Non-Residential and Mixed–Uses

New non-residential and mixed-use development within the TOD Overlay District shall achieve minimum FARs as stated in the table below and a maximum of 125% of the FAR given in the underlying zone.

Table 10.2.1.1: Non-Residential & Mixed-Use Densities

Distance from Station	Minimum FAR
0 – 500 feet	0.60
500 – 1000 feet	0.40
1000 – 2000 feet	0.30

10.2.1.2 Densities for Residential Uses

New residential uses within the TOD Overlay District shall achieve densities according to the following table and a maximum of 150% of the average density given in the underlying zone. [**At the option of the jurisdiction the following can be inserted here – "The exception to these densities being locations where the underlying zoning or use is residential development at or below 7 du/ac, in which case the new residential densities shall be equal to or between 6 to 12 du/ac"**].

Table 10.2.1.2: Residential Densities

Distance from Station	Min. Residential Density
0 – 500 feet	20 du/ac
500 – 1000 feet	12 du/ac
1000 – 2000 feet	6 du/ac

10.2.2 Building Height

For all new development and the vertical alteration of existing development, building heights within the TOD Overlay District shall conform to the following table.

Table 10.2.2: Building Heights

Distance from Station	Max. Building Heights
0 – 500 feet	150% of underlying zone
500 – 1000 feet	150% of adjacent zone or 45 feet whichever is less
1000 – 2000 feet	150% of adjacent zone or 35 feet whichever is less

10.2.3 Lot Coverage

New development within the TOD Overlay District shall achieve lot coverage according to the following table or the underlying zoning designation's maximum lot coverage, whichever is higher.

Table 10.2.3: Lot Coverage

Distance from Station	Maximum Lot Coverage
0 – 500 feet	70%
500 – 1000 feet	50%
1000 – 2000 feet	50%

Features such as front porches, overhangs, porticos, balconies, loggias, arcades, covered (non-enclosed) bicycle parking, pergolas, and similar architectural features placed on the front (street-facing) side of the building shall be exempt from the lot coverage requirement.

10.2.4 Building Frontage and Façades

In order to support the pedestrian-oriented environment within the TOD station area, building frontages onto streets and open spaces shall be maximized. Building frontage within the TOD Overlay District shall achieve the requirements as outlined in the following table:

Table 9.1.3: Building Frontage

Distance from Station	Min. Building Frontage as a Percentage of Lot Frontage
0 – 500 feet	75%
500 – 1000 feet	65%
1000 – 2000 feet	65%

Clear windows shall encompass, at a minimum, 50% of the building façade length fronting onto a street within the area from 3 feet to 6 feet-8 inches above adjacent interior finished floor and adjacent sidewalk grade. Blank walls shall not occupy over 30% of the principal frontage for non-residential buildings and 50% for residential buildings, and a section of blank wall shall not exceed 20 linear feet without being interrupted by a window or entry.

10.2.5 Building Entry

If a building is adjacent to the transit platform, transit station, a transit street, or a major pedestrian accessway, at least one main building entry shall be oriented to the adjacent transit platform, transit station, transit street and/or major pedestrian accessway. A pedestrian way shall be provided from the building entry to the transit platform, transit station, transit street or major pedestrian accessway.

To allow for their use, residential porches shall have a minimum clear depth of 6 feet and shall be a minimum of 50 square feet.

11. Street and Sidewalk Regulations

11.1 Minimum Widths

Sidewalks within the TOD Overlay District shall have a minimum 8-foot clear space for circulation with the exception of residential areas with a density of less than 12 units per acre where the width may be reduced to 6 feet.[20]

11.2 Private Use of Sidewalks

Exterior storage on sidewalks is prohibited. Outdoor seating for food and drink establishments and pedestrian-oriented accessory uses, such as sales display for flowers, small shops, food, or drink stands, are exempt from this requirement. Outdoor service of alcoholic beverages shall be clearly demarcated from public spaces. In all cases, a minimum 8-foot clear pedestrian circulation path shall be maintained along the sidewalk.

12. Sign Regulations

New signage within the TOD Overlay District shall conform to the standards stated herein and Section **[insert appropriate section or chapter, from city ordinance]**. In the event of a conflict between the standards given herein and Section **[insert appropriate section, chapter, from city ordinance]** of the zoning code, the TOD Overlay standards shall prevail.

Signage shall not reduce clear sidewalk width to less than 8 feet. Opaque signage shall not reduce visual permeability of street-fronting windows to less than the minimum clear window requirement within *Section 10.2.4: Building Frontage and Façade* of this ordinance.

13. Parking and Loading Regulations

13.1 Automobile Parking Requirements Per Floor Area or Unit Size and Land Use Type[21]

For new development within the TOD Overlay District, the number of required parking spaces (on-street and off-street) shall be based upon the following table which summarizes the maximum number of parking spaces required for permitted uses:

Table 13.1: Automobile Parking "Maximums" for Permitted Uses

RETAIL/COMMERCIAL	
Bank	1.0 space for each 333 square feet of gross floor area
Bars/Nightclubs	1.0 space for each 100 square feet of gross floor area
Bed & Breakfast	1.0 space per room or suite of rooms
Bookstores	1.0 space for each 333 square feet of gross floor area
Convenience Retail	1.0 space for each 333 square feet of gross floor area
Dry Cleaners	1.0 space for each 300 square feet of gross floor area
Eating and Drinking Establishments	1.0 space for each 100 square feet of gross floor area
Hotel or Motel Lodging	1.0 spaces per room or suite of rooms
Live-Work	1.25 spaces per dwelling unit and 1 space for each employee not residing in the dwelling unit
Lodging limited Bed and Breakfast Inn	1.0 space for each room or suite of rooms

Table 13.1: Automobile Parking "Maximums" for Permitted Uses
(continued)

MIXED-USE	
Mixed-Use	The sum of the requirements of the various uses computed separately
Retail and Service Uses	1.0 space for each 333 square feet of gross floor area
Video stores (Rental and Sales)	1.0 space for each 333 square feet of gross floor area
OFFICE	
Professional Offices	1.0 space for each 300 square feet of gross floor area
Other Offices	1.0 space for each 333 square feet of gross floor area
CIVIC	
Day Care Facilities	0.80 spaces per employee
Gov't Offices	1.0 space for each 333 square feet of gross floor area
Lodges/Clubs	1.0 space for each 125 square feet of gross floor area
Hospitals/Clinics	1.0 space for each 333 square feet of gross floor area
Museums	1.0 space for each 333 square feet of gross floor area
Post Offices	1.0 space for each 300 square feet of gross floor area
Schools-Elementary/Jr. High	10 spaces + 1 per classroom
Schools-High/College	0.25 spaces per student and staff
Sports Facilities	1.0 space for each 200 square feet of gross floor area
Theaters	0.30 spaces per seat
Worship	0.50 spaces per seat
RESIDENTIAL	
Studios and Efficiencies	1.0 spaces per dwelling unit
1 Bedroom	1.25 spaces per dwelling unit
2 Bedroom	1.5 spaces per dwelling unit
3 Bedroom	1.75 spaces per dwelling unit
Accessory Units	1.0 space per accessory dwelling unit

Table 13.1: Automobile Parking "Maximums" for Permitted Uses
(continued)

Boarding Houses	1.0 space per bedroom
Nursing Home	0.35 space per bed
Elderly Housing	0.50 space per bed
Fraternity/Sorority	1.0 space per bedroom
INDUSTRIAL	
Manufacturing/Light Industry	1.0 spaces per 333 square feet of gross floor area

13.2 On-Street Parking[22]

For new development occurring within the TOD Overlay District, on-street parking along the use's lot frontage shall count towards the parking requirements for uses on the lot set forth within the regulations of this Overlay District. This count shall be rounded to the nearest whole number.

13.3 Bicycle Parking

Convenient bicycle facilities should also be provided within the TOD district. The following bicycle parking requirements shall be applied within the TOD district. Bicycle parking shall be provided at 1 space per 2,000 square feet of commercial floor area.

13.4 Off-Street Parking Location[23]

13.4.1 Non-Residential and Multi-Family Uses

13.4.1.1 Surface Parking Lots

Off-street parking location for new development within the TOD Overlay District shall conform to the following requirements:

Off-street parking shall be located to the rear and/or interior of a lot such that its visibility from a street shall be minimized. At-grade, above-, or below-ground parking structures shall be permitted. At-grade parking structures shall have a minimum frontage as outlined in *Section 10.2.4: Building Frontage and Façade* of this ordinance.

Surface parking lots shall be placed between the structure and a side or rear lot line. Where a lot fronts onto two or more streets, parking shall be located accordingly:

- ❖ Along the street with the least amount of commercial activity

- ❖ Along the street with the least amount of pedestrian activity if the lot is located along two or more commercial streets with equal amounts of commercial activity.

A maximum 6-foot high wall or fence shall separate parking lots from abutting residential uses with a minimum 4-foot landscaped buffer. Walls and fences shall take on the character of residential uses.

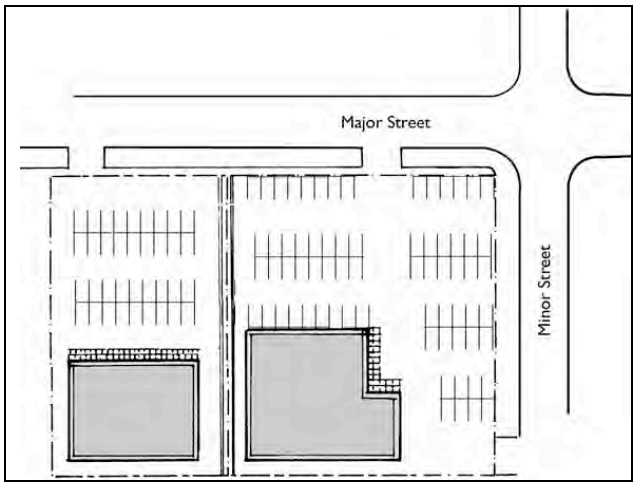


Figure 13.4.1.1.a: *Conventional parking and access configuration*

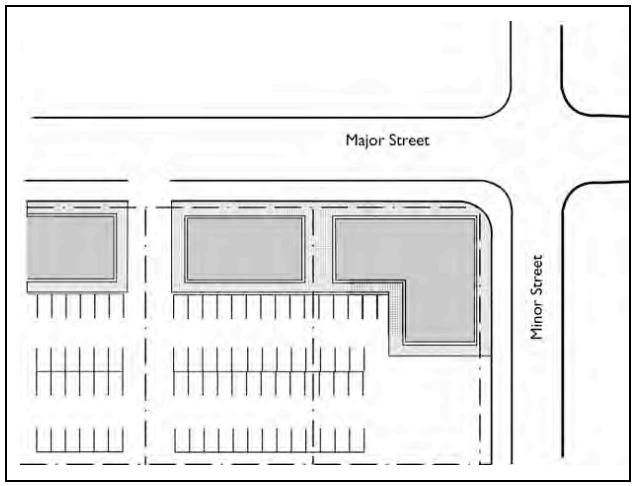


Figure 13.4.1.1.b: *Preferred parking and access configuration*

13.4.1.2 Structured Parking

Parking structures shall adhere to the same requirements as commercial buildings.

13.4.2 Single-Family Residential Uses

Garages, whether attached or detached, shall be set back at least 10 feet behind the primary front façade of the buildings they serve. The primary front façade shall comprise at least 50% of the overall width of the primary residence and the 10-foot setback shall not be measured from projections such as bay windows and porches, but from the façade of the wall which encloses the building.

13.5 Location of Vehicle Access[24]

Conflicts between pedestrians and vehicles entering and exiting parking lots shall be minimized. Access from pedestrian-oriented streets shall be avoided unless no other reasonable access is available, such as in lots with a single street frontage and no alley. Where alleys are present, driveways leading to parking lots, and loading and service areas shall be accessed from the alley. Lots with more than one street frontage and no alley shall locate vehicular access along the street with the least amount of pedestrian activity. All loading and service drives shall be of a depth that prevents loading and service vehicles from obstructing the sidewalk and roadway.

Entrances to loading and service areas shall be screened from view. For screening regulations see **[insert appropriate section from city ordinance and/or design guidelines]**. Access driveways shall not dominate the street frontage. Driveway widths shall be minimized to reduce their

presence along the street. Where feasible, driveways shall be consolidated within the single lot and shared with adjacent properties to minimize their encroachment upon sidewalks. Shared driveway agreements shall be utilized where possible for shared parking, and loading and service areas. To avoid encroaching upon sidewalks and creating uneven pedestrian surfaces, driveway slopes shall be located between the roadside edge of the sidewalk and the curb.

13.6 Loading and Service Area Location

Loading, service, and refuse areas shall be located at the interior of the lot and screened from view with walls, trellises, planting, berms, or by integration into the design of the building. Walls shall not exceed 6 feet in height. Solid walls shall be landscaped to soften their appearance and shall be made of finished materials to match the primary building. Decorative elements, variation in materials, and articulation shall be used.

V. Discussion of TOD Decision Points

This section provides a discussion of points that jurisdictions should take into consideration when developing their specific Overlay District. The discussion points outline the intent of the regulations and provide examples from other jurisdictions that have developed and are implementing TOD zoning districts. In order to gain a better understanding or "feel" for what constitutes a successful TOD, the reader should also refer to the following Chapter IV- Standards and Guidelines and its accompanying images

1. "Types" of Transit-Oriented Overlay Districts

TOD characteristics will vary depending upon the context of the transit station area. For example, the intensity of development is likely to vary between a station in a downtown and a station on a suburban arterial street surrounded by lower density single-family housing. Therefore, some jurisdictions may decide to vary the zoning requirements for the TOD Overlay depending upon the location of the station. This is the source of many of the discussion points that are presented in this document. The following are categories of Transit-Oriented Centers as defined by RTD for the Denver Metropolitan Region, followed by a short description of their characteristics:

Urban Center – a district characterized by high-density and high-rise urban development, regional employment, commercial, entertainment, and high-density residential uses, and is well served by various modes of transit. A high-level of pedestrian amenities and a fine-grained, interconnected street system make the area more conducive to pedestrian activity. Structured parking predominates in this district.

Regional Center – an area of high employment concentration, region-serving commercial uses and community facilities, and high to medium density residential. The district is well served by various modes of transit although service may not be as frequent or as extensive as in the Urban Center district. Structured and surface parking serve the area.

Community/Town Center – these are typically found in pre-WWII suburbs and are highly conducive to pedestrian activity as streets are well-connected and blocks and lots are fairly small. A community-serving commercial core contains small retail shops and local services. Although the area likely developed during the early 20th Century streetcar era, it is now served by bus. This district can be served by light rail. Moderate to low density residential uses are in close proximity to the commercial core, which is served by surface parking.

Suburban Center – Suburban Centers are defined by a commercial area within low-density, predominantly residential communities, and are characterized by consolidated retail uses that cater to the automobile, such as shopping centers or retail strips. These areas are characterized by an auto-orientation, few pedestrian amenities or linkages, and the discreet separation of land uses. Low densities preclude the efficient use of light rail, but can be served by buses and express buses, or park-n-ride facilities to support mass transit.

Commercial Transit Corridor – this is an area that is defined by higher-density development than can be found in a Suburban Center, but is still served largely by the auto. Mid- and high-rise employment is served by surface parking lots with low-density retail and service establishments that largely support the adjacent employment. The area is surrounded by low-density residential uses. Although there may be a critical mass of employees and other users that could support light rail, easy auto access and ample parking make these areas more conducive to bus service.

Park-n-Ride – these facilities largely serve low-density development and are characterized by ample surface parking and few pedestrian amenities beyond those that support transit riders as they transfer to other means of transportation.

An inherent aspect of this discussion is the issue of infill development, its character, and its purpose. This will require market studies that take into account the economic conditions at the region, city, and neighborhood level. In other words, jurisdictions need to consider how TODs will function within a larger infill strategy. TODs should not be planned as islands of development outside of the context of the entire jurisdiction to avoid undermining efforts to revitalize areas and encourage transit ridership.

2. Transit-Oriented District Boundary and Gradient

Typically the boundary of a TOD is determined by distance from the transit platform. This is generally related to walking distance, but can also be affected by barriers to pedestrian access e.g., freeways, topography, railroad tracks. Also, consideration can be given to a gradient in the TOD zoning requirements and standards that is more “aggressive” within the more immediate Station Area (i.e. 300 to 500 feet. The concept of a gradient can also be used to create a transition in the intensity of use to the area surrounding the TOD.

2.1 Walking Distance

In general, typical comfortable walking distances cited are 1,200 feet to 2,000 feet or a 5 to 10 minute walking radius. However, these are general standards that assume a uniform built environment that provides a comfortable pedestrian realm. Pedestrian safety and comfort are key factors in determining whether people will walk to a destination and the distance they are willing to walk. The presence or absence of barriers and amenities will greatly affect the experience. These can include both physical and man-made barriers and amenities such as:

- A connected or disconnected street pattern;
- The presence or absence of sidewalks and crosswalks;
- Natural physical barriers (streams, lakes, topography, etc.);
- Man-made physical barriers (buildings, arterial crossings, soundwalls, golf courses, etc.);
- Ample lighting during the evening;
- Sufficient shade protection from the sun during a hot day;
- Site amenities such as seating and trash receptacles;
- A comfortable buffer between the roadway and the sidewalk; and,
- Diversity in uses, activity, sights, and possibilities for interaction.

At a coarser level, the boundary of a TOD will be defined by a linear measurement of the radius or "as the crow flies." Refinements at the planning stages will reveal that the actual measurement of a TOD radius will take into consideration turns and diversions created by street patterns, barriers, etc. that would naturally make a pedestrian veer off a direct course.

This phenomenon was documented in a study conducted by Anne Vernez Moudon at the University of Washington in Seattle. The survey compared two neighborhoods – one with an interconnected street pattern and one without. The study showed that actual walking distances in the well-connected neighborhood were 1.29 times the length of the straight-line distance of the radius, while walking distances in the less-connected neighborhood were 1.6 times the length of the straight-line measurement of the radius. In other words, pedestrians walking from origins within the "hypothetical" walking radius were walking longer distances in the neighborhood with the disconnected street pattern than those living within the connected system.

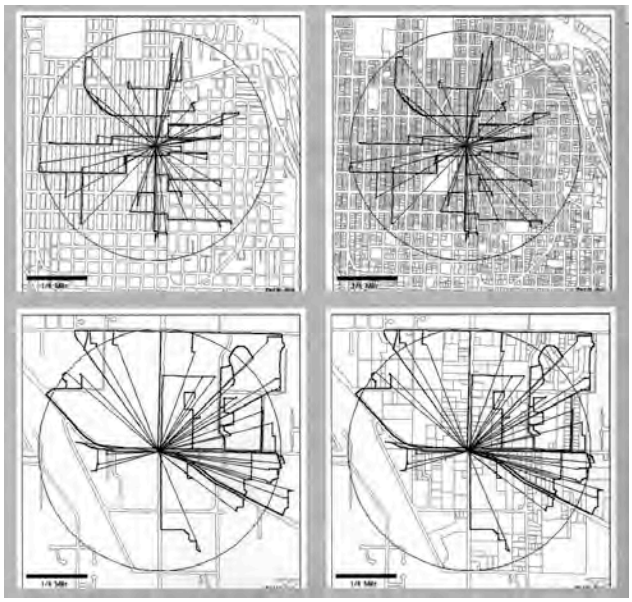


Figure 2.1: *Pedestrian Accessibility Diagrams. These diagrams illustrate walking distance in four neighborhoods in Seattle, WA. The circle is a 1/4 mile radius and the lines radiating from the center show the walking distance to the center. The top two panels are diagrams of a highly connected neighborhood, while the bottom two panels illustrate distances in a more disconnected area*. (Source: Vernez Moudon p. 41)

The aforementioned issues that will inevitably arise when defining the TOD district will necessitate that each jurisdiction perform an assessment of the neighborhood surrounding their respective station areas. Unlike the hypothetical circumference of a walking radius, the district may contain kinks and indentations.

The following table illustrates the walking distance boundaries as defined within ordinances and guidelines of several jurisdictions with adopted TOD regulations.

Table 2.1: Walking Distances

Source	Distance of District Boundary
Seattle, WA	1/4 mile radius from LRT station
Hillsboro, OR	1300’ radius from LRT station
Portland, OR	1/4 mile radius from LRT station
Washington County, OR	1/2 mile radius from LRT stations 1/4 mile radius from primary bus routes
San Diego, CA	2000’ radius from transit stop

2.2 Gradient

A gradient creates flexibility for a variety of land use and urban design components. Land uses, densities, building heights, setbacks, and other elements can be regulated such that they create higher levels of activity closer to the station and lower levels at the perimeter of the TOD to meet existing low-density uses. Use gradients can be configured to encourage a greater mix of uses at

the center and then transition to a single use that reflects the predominant use in the area surrounding the TOD. For example, uses should transition to residential buildings of similar character to a surrounding single-family neighborhood.

Gradients can also vary within the TOD where circumstances call for greater sensitivity to existing uses. Building heights may vary within the TOD to reflect existing building height variations. In other words, areas closer to the station will generally cater more to the pedestrian and less to the automobile and can be higher densities, a finer grain of detail, and a greater mix of uses.

3. Permitted Uses

Development must create an appropriate mix of complementary uses to be economically sustainable and successful. This is particularly important for Transit-Oriented Development as its success or failure will also affect transit ridership, pedestrian activity, and the future of other station area efforts. To complicate matters, most of the stations along the Central Phoenix/East Valley (CP/EV) light rail corridor will be located within established communities, where over time, existing regulations have permitted some uses that are not compatible with TOD principles. During the station area planning process, individual municipalities should review their zoning ordinances for possible obstacles to creating Transit-Oriented Development. At a minimum, an interim overlay should serve to prohibit incompatible uses from developing in the station area before a rezone can be completed. Consequently, landowners and developers should be given alternatives to prevent a scenario where no development occurs or it occurs in a manner that meets TOD principles in letter, but not in spirit.

For this reason, it is equally important that the overlay encourages development that is conducive to creating a transit- and pedestrian-friendly environment and that guidelines and regulations create a pedestrian-friendly urban character. Alternatives can give property owners options to develop their parcels and prevent a no-growth scenario from occurring.

Almost any urban or suburban land use is appropriate within a TOD, the exceptions being uses that are noxious or otherwise unsafe, and those that do not support pedestrian activity, either because of the low intensity nature of their use (their required building form or siting) or that they are dominated by automobile activity. Uses with these characteristics have been listed in the Prohibited Uses section. Emphasis for permitted uses is placed on configuration, program, and design. An office campus in a suburban area will typically consist of low-rise buildings with the requisite sea of parking and little variety in uses, forcing workers to drive for lunch or errands. However, an office campus could easily fit into a TOD if configured, permitted, and designed in such a way that it creates a fairly dense and walkable environment. On the other hand, a bulk facility requires that customers take their goods home via a car necessitating ample parking. By its very essence, such a use cannot be configured to accommodate pedestrian activity.

Figure 3.a: *An industrial park in Petaluma, California designed to accommodate the automobile.*

Figure 3.b: *Pedestrian-friendly example of light industry in Berkeley, California.*

4. Retail and Service Uses

Allowable commercial uses should generally serve the surrounding neighborhood or provide convenience services and goods for transit riders. The goal is to allow a critical mass of retail and service uses that generate large amounts of foot traffic e.g., video stores, dry cleaners, coffee shops, bookstores, restaurants, etc. Exceptions can be made for region-serving retail uses that cater to the pedestrian and have development forms that fit in with a "Main Street" style commercial street. Examples include such retailers as Pottery Barn and Barnes and Noble, and some grocers who have revised their standard formats to fit within pedestrian-oriented areas. Examples of the latter include Raley's in San Diego, CA; and Safeway stores in Pleasanton, CA, Seattle, WA and several other communities.

Careful consideration needs to be taken by jurisdictions in directing retail uses throughout their community to appropriate locations. This will help the economic viability of the resulting "Main Street" or mixed-use commercial center in the TOD. There is a tendency to limit the types of retail or their business organization (i.e. chains or franchises) or zone too much area for retail. Both of these tendencies can result in areas with too many marginal businesses or vacancies.

5. Mixed-Use Development

Mixed-use development is a basic component of both transit-oriented and pedestrian-oriented development, and most traditional downtowns. A mix of uses promotes walking in completing daily tasks as origins and destinations are brought closer together. At a land use policy level, zoning for mixed-use allows the development of neighborhood centers or "Village Cores." Care must be taken to ensure that a mix of uses is required, and that the mix of uses is viable given the demands of the real estate market. If the market for retail is weak in the near term, allow small office space or a civic use in the ground floor of mixed-use buildings that can be converted to retail in the future when demand can support it.

At a site level, this mixed-use center can enliven a neighborhood and its streets with high-levels of pedestrian activity in the day and into the evening. This can be achieved through either vertical or horizontal integration of uses.

Figure 5: Vertical *Mixed-use development provides a high level of street activity throughout the day and evening – Belmont Dairy, Portland, Oregon.*

5.1 Vertical Mixed-Use

Vertical mixed-use is the stacking of different uses on top of each other in the same building. Typical use mixes include: ground floor retail with office and/or residential above, office on the street level with residential above or ground floor retail with parking above. In developments over two stories the mix of uses can be more varied, such as retail on the ground floor with office on the second floor and residential above. This configuration uses the office space as a "buffer" between the commercial and residential uses since offices are usually vacated by early evening. Ground-floor commercial uses should be limited to establishments that offer a high-level of interaction with the pedestrian realm. This can include such uses as restaurants, cafes and small retail and service establishments. These uses can also benefit by allowing their activity to spill out onto the street attracting pass-through pedestrian traffic, people watching, and mingling.

Care should be taken that ground floor offices do not create a visual "wall." Jurisdictions should discourage uses that have a tendency to turn their backs onto the street eliminating the transparency needed to create an active pedestrian street. These can include banks and certain types of offices which require more privacy or security and tend to screen interior activity with blinds or blank walls. Large retail establishments, in particular bulk wholesalers, are also discouraged within this district as they tend to have large blank exterior walls, because of the amount of interior display they require. Exceptions can be made for retailers that offer a degree of interest along the street with changing window displays.

5.2 Horizontal Mixed-Use

Horizontal mixed-use has complementary uses built side-by-side on adjacent parcels or within the same parcel. For instance, single story commercial uses could front a street with a courtyard and contain townhome residences behind. Also, allowing single-family homes to serve as office space within a residential neighborhood is an example of horizontal mixed-use. Permitting such uses is a simple way of allowing businesses to operate within a neighborhood in keeping with the surrounding character.

5.3 Live-Work

Live-Work units provide the opportunity for residents to use their homes as offices, workshops, studios, galleries, and other businesses. Activities such as this provide vitality for a neighborhood, and can also be used to buffer a residential neighborhood from an adjacent mixed-use corridor or employment district. Care must be taken by the municipality in designating "live-work" to ensure that users actually live *and* work in the development, and avoid having the development become single-use residential. This can result in conflicts between new residents who may become more concerned and vocal about noise and other impacts from adjacent non-residential areas, thereby nullifying their effectiveness as transitional uses. Another consideration is the extent to which the "work" use is allowed to involve on-site employees and/or visitors. This can increase demand for parking, but also make access to transit more important. Live-work should not be confused with "Lofts" which is a term describing a particular building type that may or may not be live-work.

6. Residential Uses

Much research has been done to establish "necessary" densities for support of different transit types. These serve best as "rules of thumb," because market conditions and behavior of potential transit riders varies region by region. Some of the earliest and most cited research on this subject was published by Pushkarev and Zupan in 1977. They recommend a residential density of 4 du/ac for local bus and 9 to 12 du/ac for light rail.

While reviewing the following examples, keep in mind that "minimum average" densities represent the median of a range of recommended densities. This allows an area of transit-oriented development to contain different types of homes that meet the needs and desires of a cross-section of the population. Also, these density guidelines recognize that some people will choose to live in lower density areas and not take advantage of access to transit. The ranges below were arrived at through market assessments and "bargaining" amongst a cross-section of stakeholders.

Before a community in the Valley Region adopts a minimum average density for Transit-Oriented Development they should assess the real estate market and undertake a public education and decision-making process. It should be noted, however, that the market study must take into account the changing demographics that most communities are experiencing today – decreasing

household size, more seniors and unrelated shared households, etc. The market study must be more thoughtful than just a reflection of past trends in the housing market and look beyond the current housing market.

The following table summarizes desired densities established in several transit-oriented development standards:

Table 6: Example TOD Residential Densities

Source	TOD Type	Residential Density
San Diego TOD Guidelines	Urban TOD (LRT served)	25 du/ac min. average (18 du/ac min.)
	Neighborhood TOD (Bus served)	18 du/ac min. average (12 du/ac min.)
LUTRAQ Study, Washington County, Oregon	Mixed-Use Center (LRT served)	15 du/ac minimum average (7 to 50 du/ac range)
	Urban TOD (LRT served)	15 du/ac minimum average (7 to 40 du/ac range)
	Neighborhood TOD (Bus served)	8 du/ac minimum average (5 to 20 du/ac range)
Portland Tri-Met, Planning and Design for Transit Handbook	LRT Served TOD	Up to 1/8 mile 30 du/ac 1/8 to 1/4 mile 24 du/ac 1/4 to 1/2 mile 12 du/ac
	Bus Served TOD	Up to 1/8 mile 24 du/ac 1/8 to 1/4 mile 12 du/ac 1/4 to 1/2 mile n.a.

7. Prohibited Uses

The list of Prohibited Uses represents only a partial list. Each jurisdiction will need to determine the amount of specificity and the types of uses they wish to include in the list. The overall goal of the prohibited uses should be to prevent uses that by their nature are not pedestrian- or transit-oriented within the TOD. Existing prohibited uses should be grandfathered out, however these uses should be accommodated in other parts of the jurisdiction so that they are not completely prohibited from conducting business within the jurisdiction's limits.

For example, an auto repair shop that is grandfathered out because it is prohibited by the overlay ordinance should be allowed to relocate within an area that is zoned for complementary uses and presents few barriers to conducting business e.g., high land costs. These uses should be located outside of the TOD, but in areas where their needs can be met e.g., high levels of auto access and where they do not negatively impact adjacent uses.

8. Exterior Display and Use

Outdoor seating for restaurants, cafes, and other eating establishments and pedestrian-oriented accessory uses, such as flower, food, or drink stands, are typically exempt from this requirement as they provide pedestrian-oriented activities that encourage an active street-life. Although these are highly desirable uses within a TOD, their function should be regulated to prevent conflicts with pedestrians and other users of the sidewalk. This typically means keeping an 8-feet clear circulation space along the sidewalk; although the minimum requirement for ADA is 6 feet. Outdoor eating areas can expand a restaurant's or café's capacity and can attract other pedestrians to the area, but care should be taken that enough room is left for persons walking, chatting, or standing on the sidewalk.

Figure 8: *This vibrant sidewalk in Walnut Creek, California accommodates outdoor dining while providing a generous pedestrian right-of-way.*

9. Grocery Stores

Grocery stores are an exception to the maximum 30,000 square feet of floor area requirement because they are an essential component of a community. However, they are limited to a maximum of 50,000 square feet as anything beyond this, in combination with the resulting size of parking lots, would extend walking distances to an uncomfortable length. Various grocery store chains can be accommodated within a TOD. Many chains are commonly building stores averaging below this maximum. In fact, large chains such as Safeway and Albertson's have developed prototypes that are reducing store size. In 1999 Safeway stores averaged 43,000 square feet and their new prototype store was 55,000 square feet, down from 62,000 in 1998. Safeway's most recent definition of a "Superstore" is 35,000 square feet while Albertson's average store size runs 48,000 square feet.

The growing popularity of organic foods has also brought chains such as Whole Foods, based in Austin, Texas, and Wild Oats, based in Boulder, Colorado, into the more mainstream market. Joining in are specialty grocery stores such as California's Andronico's markets. Typical store size for a national chain such as Whole Foods averages approximately 26,000 square feet with their largest store opening up in Washington State at 50,000 square feet. In addition, a popular

strategy for these types of stores, which often include prepared foods sections within their store, allows shoppers to drink coffee and dine in indoor and outdoor facilities. Moreover, Andronico's Markets have been innovating store designs that allows multiple entrances and unobstructed windows to face the street, while also providing entrances to parking lots placed at secondary streets or rear parking structures.

10. Uses Requiring Large Building Footprints

A suggested maximum has been set for building footprints, but there are several issues that are just as important to consider as building size. These can be divided into two categories: reasons why large-scale buildings are prohibited from TODs and reasons why exceptions could be made. For commercial uses it is not so much the use that should be prohibited, but the manner in which it can be placed within a pedestrian-oriented setting.

The major concern is that buildings should not be sited so they interrupt the desired pedestrian flow from the transit platform and station area to surrounding transit-supportive uses.

10.1 Reasons for Prohibition

Uses that require large building footprints are typically selling large-scale goods or large quantities of goods requiring the use of an automobile to carry merchandise home. As a result, floor area to parking ratios will demand larger parking lots as floor area expands. Moreover, to advertise the fact that they have ample parking, such uses will typically face parking lots towards the street making connections between the sidewalk and the store entrance difficult, and removing active building frontage from the sidewalk. Some "big box power centers" with multiple large format stores have site plans that result in arterial streets being more than an 1/8 of a mile away from store entries.

Large floor areas and parking lots elongate walking distances making accessibility to a variety of different uses by foot (trip linking) more difficult. In addition, large-scale goods and large quantities require stores to maximize their display area often sacrificing a street presence as interior walls are used for display and storage. This creates an internalized orientation that, like industrial uses, turns a blank façade to the street. As pedestrians are naturally not the primary clients of interest, large-scale, mass production can be devoid of architectural detailing and interest, exacerbating the lack of interest created by an internal orientation.

10.2 Exceptions

Exceptions can be found where uses that are more typically found in auto-oriented settings have been designed to fit within a pedestrian setting. These are typically retailers who sell goods that

can be carried more easily than bulk goods e.g., The Gap, Crate & Barrel, chain bookstores, and other specialty retailers. In addition, they have incorporated display and large, transparent windows along the street façade, for pedestrians to view indoor activity, with the understanding that this can draw passers-by into the store to browse and shop. Other large-scale retailers are placing more active uses along the street, such as cafes and bakeries allowing tables and chairs to take up part of the sidewalk. Lingerers attract more people that will remain in the area longer and shop for a longer time.

Figure 10.2.a: *Crate & Barrel has designed this store in Berkeley, California to positively contribute to the activity along the street.*

A case in point is a new Home Depot store that will be located in the Hollywood/Sandy Boulevard neighborhood, one of Portland, Oregon's traditional "Main Street" neighborhoods. The 166,000 sq. ft. Halsey Place development will contain ground-floor retail shops, second-floor offices, and 26 apartments on the third and fourth floors. These more pedestrian-oriented uses will line the street as the frontage for the Home Depot store, which will cover 104,000 sq. ft. at the interior of the property. The store's garden center will be substantially smaller than that of other Home Depot stores and will become one of the liner retail shops along the street. As it will cater to a more urban market, the store will carry mostly indoor plants. Two-levels of structured parking will serve the development.

This project is an innovative step for the large-scale, home improvement giant. Not only is the store a smaller footprint than its usual model, which typically ranges from 135,000 to 140,000 sq. ft., the company will also act as the property manager for the entire development.

Figure 10.2.b: *Halsey Place in the Hollywood/Sandy Boulevard neighborhood in Portland, Oregon will surround a Home Depot store by lining the street with pedestrian-oriented uses. (Source: New Urban News, p. 3)*

Grocery stores, civic uses, and sports facilities are exempt from this requirement as these uses are an essential need for every community. These uses also generate large numbers of users, many of whom could take transit if it is readily available. Also, accessibility to these uses should be maximized to all segments of the population, including those who may not have access to automobiles.

11. Conditional and Use Permit Uses

As mentioned in previous discussion points within this chapter (see *Discussion Point #3–Permitted Uses, Discussion Point #10–Uses Requiring Large Building Footprints,* and *Discussion Point #12–Drive-Through Facilities*), a variety of uses can be accommodated within a TOD area given certain conditions and standards. The general intention is to allow these uses to locate within the area with modifications that make them more pedestrian-oriented. This requires meeting site, architectural, and programmatic standards, many of which are outlined in this model overlay and the PeD Standards and Design Guidelines publication produced for Valley Metro. Some general considerations should also include:

- ❖ prohibiting standard store formats if they are not pedestrian-friendly;
- ❖ allowing uses such as banks, pharmacies, and convenience markets, but prohibiting drive-through components and blank façades;
- ❖ requiring uses that prefer large building footprints to scale-down in size and integrate a finer level of architectural detailing; and,
- ❖ avoiding large expanses of blank walls along the street by requiring uses that are typically internalized to provide a more active component along these areas.

12. Drive-Through Facilities

Establishments with drive-in or drive-through windows such as fast-food restaurants, drugstores, and banks should go through a stringent conditional use review to make certain that the drive-through facilities do not degrade the transit-friendly and pedestrian-oriented environment required in the TOD Overlay District. Such establishments typically consume an undue amount of land, require excessive curbcuts, and result in an unfriendly environment for pedestrians. They typically lead to the buildings being set further back from the street. They also give the psychological signal to the driver to not get out of the car and conduct other errands on foot, and in turn impart a sense of auto-dominance to the pedestrian.

Figure 12.a: *This Walgreens in Oakland, CA has its entrance oriented to an active street with side-on parking.*

Figure 12.b: *The drive-through of this same Walgreens is accessible from a more auto-oriented side street and through the side-on parking lot.*

13. Gas Stations

Gas stations are a necessary component within a community, but are generally not conducive to creating a transit-friendly or pedestrian-oriented environment. Therefore, the number and location of gas stations within a TOD should be controlled. When they do occur, their design should be highly regulated in order to avoid the typically mass-produced character of corporate design and should instead conform with the surrounding neighborhood, and provide a high level and quality of detail. Gas station operators should look to historic examples of gas station design when the architecture was more refined and often had a relationship to its surroundings. Gas stations often have excessive curb cuts for convenience to the auto. Solutions may entail specifying a maximum allowed proportion of curb cut to frontage. This will require property owners to consolidate access points or create narrower one-way entries and exits. Within a TOD, where a mix of uses is a prerequisite, accompanying gas station uses such as mini-marts, convenience sundries sales, car washes, etc., are unnecessary, therefore, they should be prohibited.

14. Light Industrial Uses

Most industrial uses are not conducive to creating a transit-supportive and pedestrian-oriented environment. Relative to other employment uses, modern industrial manufacturing, warehousing, and processing tend to create low demands on labor and, in turn, create streetscapes with little activity except for autos and trucks. This is an issue for transit, because low job generation will also affect transit ridership numbers. Neither are noxious and noisy activities conducive to creating a comfortable street environment.

Moreover, industry typically requires larger parcels of land to carry out large-scale activities and to allow easy maneuvering of trucks around a site. They also require large building footprints and have little need for windows. Therefore, industrial sites become quite inaccessible for pedestrians. Unlike pre-WWII structures, which brought life to streets with large industrial sash windows, modern structures often face the street with massive, blank walls as electrical lighting and cooling have eliminated the need for windows. Moreover, low-cost construction techniques and the inherent internal orientation of industrial uses have done away with façade details that are an essential component to creating pedestrian-friendly public spaces.

Types of uses that would create street activity, such as accessory office or retail space should be located towards the street frontage of industrial buildings and lots. Permitted industrial projects should include supportive commercial uses such as restaurants, coffee shops, and uses that support other daily needs of employees and allow them walking opportunities throughout the day.

Moreover, a mix of uses should be encouraged that spans the gamut from industry to residential. It is important that uses be compatible. Some light industrial uses, such as artisan and light assembly uses, can be more compatible with context-sensitive uses such as residential. In turn, allowing live-work will also minimize the disparity between these two uses as residents are part of the employment and work force.

15. Outdoor Recreational Uses

The provision of open space within a community is a necessary component of successful community planning and urban design. The function and distribution of public open space should meet the passive and active recreational needs of the community it serves. Meeting friends, playing ball, sunning, picnicking, running, and just plain sitting and watching the surrounding activity is often seen as an essential part of what forms a community. The central location of the transit station is a natural location for a public plaza or park as a large number of uses and a critical mass of people will be focused around this node. This combination can be an effective way of structuring a community.

Public space should not be an afterthought, particularly in situations where it plays such a central role. Ideally, uses will surround it and focus their front doors onto it to provide an active street life around its perimeter creating the opportunity for community policing of the space.

To keep them at a pedestrian-scale, parks and plazas should not have an area greater than 0.25 to 1.0 acres within the densest part of the TOD.

16. Parking Facilities

In an auto-dependent society the availability of free parking is considered an essential requirement by commercial businesses. It is a common belief that the more visible the parking, the better to attract customers. Thus, accessory parking and commercial parking facilities are often a ubiquitous and dominant part of the landscape in retail and employment areas. Oceans of asphalt, disjointed parking lots, interrupted sidewalks and building frontages, and long and uncomfortable walking environments are just a few of the resulting characteristics of such auto-dominated commercial or employment centers. However, parking facilities are necessary in today's society, and can be an attractive and beneficial aspect of pedestrian- and transit-oriented neighborhoods if they are well integrated into the setting and are not allowed to create a barren landscape. Many cities have creatively inserted parking facilities into these finer-scaled landscapes through shared-parking agreements, careful site planning, lower parking requirements, innovative mixed-use configurations, and creative architectural and landscape design. The general goal is to diminish the impact of auto facilities on the landscape and allow for greater street continuity and a more human-scaled environment. Particular techniques for dealing with parking will be discussed within the parking and loading regulations in the following *Discussion Point #21-Parking Ratios, #22-On-Street Parking, #23-Off-Street Parking Location, #24-Location of Vehicle Access, and #25-Loading Location and Vehicle Access*.

Figure 16: *Ground-floor retail, façade articulation, and street furnishings help to integrate this city-owned parking facility with the street, and consolidating parking for the area into one attractive building.*

17. Affordable Housing

As areas within a TOD intensify or redevelop, jurisdictions should ensure that housing affordability does not become an issue for existing and potential residents. Depending on the station area type, the underlying zoning and use, and the possibility of the displacement of

affordable housing, particularly given the relatively low value of most affordable housing in relation to other potential uses. In these situations, cities should add regulations to their standard affordable housing provisions to ensure equal access to housing.

18. Setbacks and Build-To Lines

18.1 Building Frontage Design

Disneyland and shopping malls understand pedestrians. Both know that maintaining a pedestrian's visual interest can increase the distance they are willing to walk. Moreover, pedestrians are attracted to Disneyland's Main Street because it is charming and quaint. These qualities are strongly associated with scale, detail, and activity that such a place provides. In fact, facades along Disneyland's "Main Street" are perceptively scaled-down to ensure those quaint and charming qualities are communicated. The same technique can be used to create positive pedestrian spaces in our everyday communities. This is achievable through the use of a continual and consistent building frontage with a high level of articulation e.g., windows, doors, awnings, balconies, etc.

18.1.1 Issues to Consider

- Buildings of appropriate height can effectively define and visually narrow the street.
- Continuous and well-articulated building façades reduce perceived distances.
- Articulation of building façades should provide visual interest and shade, and reduce the feeling of "exposure" for the pedestrian.
- The level of consistent frontage and articulation depends on the district and use – i.e., mixed-use district vs. a single-family neighborhood.
- An effective means of maintaining visual interest for a pedestrian is to provide windows which allow a visual connection between the pedestrian and interior uses along the street.
- On residential streets, porches, large windows, and welcoming entryways provide opportunities for friendly transitions between public and private spaces.
- Physical maintenance of buildings has an impact on the pedestrian environment. As with the condition of pathways, the repair and cleanliness of buildings shows to the pedestrian whether the area is being cared for and if it is safe to be there.
- Quality building materials have an impact on the quality and ease of maintenance of the pedestrian environment.

- ❖ Property owners should be held responsible for the condition of their vacant buildings through the use of citations and fines.

- ❖ Empty store windows can be kept clean and leased out to adjacent businesses for advertising, or non-profits could use the space for notices and announcements.

- ❖ The maximum setback of buildings from the street should be controlled, not just the minimum setback.

18.2 Building Proportions

In a mixed-use commercial district, an appropriate building height would have a minimum of at least two stories (ground floor retail and upper floor office); it is likely that a mixed-use building with residential will require a minimum of three stories so there can be two levels of residences. This height effectively defines the street provided that the street is not excessively wide. The wider the street, the taller buildings should be to define the street. A vertical height to street width ratio appropriate to the Valley Region would be 1:3. For example, a 66-foot wide street could achieve a visual definition with 22-foot high buildings (a two-story building or a one-story building with a taller roof or parapet wall). The lower the ratio (i.e. 1:2) the more definition is achieved. It is more visually appealing for buildings to be at a relatively consistent height with variation indicating the importance of the use within buildings and creating gateways.

Within a mixed-use block, buildings should abut the street and form a consistent "street wall." A proportion such as 70% should be maintained as a minimum linear street frontage per block and/or individual property. Please also refer to *Section 4 in Chapter VI. Standards and Guidelines* of this document when considering building design.

19. Density

The density of existing development around the stations varies from station to station. This will require a degree of flexibility in the zoning code in order to address the unique characteristics of individual communities. Nonetheless, densities closer to the transit station should be high enough to support transit use. Coupled with an appropriate variety of uses, higher densities will create a lively setting throughout the day. The urbanologist Hans Blumenfeld set comfortable pedestrian densities at a range between 12 to 60 dwelling units per acre (du/ac) "to ensure people can easily reach places by foot and have frequent face-to-face contact without being overawed by a monumental scale" (Blumenfeld pg. 1). However, in higher-density downtowns, where a more urban environment is the case, densities can reach much higher levels.

Today's suburban planned area developments (PADs) are typically designed at 4 to 6 du/ac on average, and offer very little pedestrian convenience. Americans have tended to prefer low-density developments because they are "perceived" to be safer, quieter, and more attractive. However, perceptions can change with good design and a blending of densities. Medium and

higher density housing within a TOD will also generate less traffic than the same number of units developed at a lower density. Density that is well designed will not have a negative effect on property values in adjacent neighborhoods and can create safe neighborhoods by the fact that a critical mass of people can police an area by their presence.

A density gradient within the overlay district can be one of the ways to dissuade concerns. A gradient can allow for fairly high densities closer to the station while adjusting to surrounding uses at the perimeter of the district. Densities within at least 1,000 feet should be high enough to be transit-supportive to encourage greater activity around stations and higher ridership for the system. However, each jurisdiction should decide on the appropriate distance to locate higher densities depending on each station's own unique circumstances. Table 6: *Example TOD Residential Densities* within *Section 6* of this chapter contains minimum residential densities and area of coverage suggested by other jurisdictions.

20. Sidewalk Widths

20.1 Sidewalk Design

Sidewalks are not just thoroughfares for pedestrians but they are also important social spaces where people interact and walk together. The sidewalk must be wide enough to accommodate movement as well as amenities, such as seating, that facilitate social interaction. This makes the sidewalk more comfortable and appealing, which can encourage uses that increase security.

20.1.1 Issues to Consider:

- ❖ Appropriate sidewalk width given the use and amount of activity that is expected.
- ❖ Selecting materials with consideration towards maintenance and long-term appearance.
- ❖ Minimization of obstructions and conflict points.

The preferred width of a sidewalk is 12 to 15 feet in commercial and mixed-use areas with storefronts close to the street. This allows for pedestrian circulation and window-shopping. The minimum possible is eight feet which is also the minimum clear space needed if a wider sidewalk is used for other purposes such as display, dining, and seating. Widths over 12 feet provide space for pedestrian amenities, for local business activity to spill out onto the sidewalk and for leisurely walking pace without vehicle traffic dominating the pedestrian realm. In residential areas sidewalks should be at least five feet wide, which is the current minimum width allowed by the American's with Disabilities Act (ADA) requirements. Sidewalks in residential areas that may have more pedestrians, such as parks, schools, or neighborhood centers, may need wider sidewalks.

Sidewalks should be provided on both sides of the street; the only exception should be in lower intensity residential neighborhoods where pedestrians can be safe walking in the street. Such areas, however, are too low density to support transit and, therefore, will not be present within TOD Districts. However, local jurisdictions should, over time, monitor traffic in these neighborhoods to ensure that an increase in auto usage does not create hazardous situations for pedestrians.

"Wandering" (unnecessarily curving) sidewalks should be avoided as pedestrians prefer to walk the shortest distance possible. Landscaping and other design treatments can achieve a more casual and rural atmosphere without requiring pedestrians to walk longer distances.

The surface of the pathway should remain continuous even at driveways. In other words, driveways should not create uncomfortable slopes where they cross a sidewalk, and the paving material of a sidewalk should be continuous across a driveway. This signals to the drivers that it is they who are crossing the pedestrian realm and must yield accordingly. Curb cuts themselves should be consolidated to minimize such potential conflict points.

To avoid the possibility of cars parking on sidewalks and impeding the pedestrian, box curbs should be used instead of roll curbs; in some cases, bollards may be needed.

General maintenance such as fixing potholes, sidewalk decay, damaged benches and other pedestrian amenities are crucial to the pedestrian experience. Physical safety is not the only issue, but proper maintenance indicates a level of care, which in turn improves a pedestrian's sense of security.

20.2 Sidewalk Amenities/Seating

The placement of pedestrian amenities such as trash receptacles, benches should not be "regimented" e.g., "placed every 40 feet", etc. but rather have a relationship to the needs of a specific location. This is particularly important given that funds for such amenities are generally limited. Locating amenities must take into account that use of a street changes over time and that the placement of trashcans, benches, telephones, drinking fountains, and vendors must take this into account. Furthermore, street amenities and transit stops should uniquely reflect local character of surrounding neighborhood/district e.g., industrial, traditional, contemporary helping to achieve a sense of a neighborhood identity.

Public seating is a welcome relief for pedestrians. They invite people to stay on the street to rest, converse, wait, read, or just people-watch. Research has revealed that most people prefer locations where there is the most opportunity to watch other people. They feel safer when they can see and be seen by other people. People-watching of this sort naturally occurs in areas where there is outdoor dining, seating, window shopping, playgrounds, etc.

Amenities are a necessary public expenditure and should fulfill an area's immediate needs but be flexible over time. The design and materials of seating and other amenities should reflect the character of the surroundings.

21. Parking Ratios

Transit and walking will play more dominant roles in the mobility patterns of TOD residents and users allowing for a reduction in parking requirements. Transit-Oriented Development offers the variety of uses that facilitate "trip linking" and emphasizes pedestrian comforts to encourage walking trips to and from the transit station and within the TOD. Several techniques exist that creatively address this issue.

Tandem parking, where cars are parked front to back rather than side by side, allows for a different parking configuration that can result in less parking area along the street frontage. Parking garages along the street would thus become one car-width rather than two car-widths. Simple parking agreements between users can be reached to manage access to spaces. For commercial uses, valet parking allows for a more efficient method of parking cars, maximizing the number of spaces available. One innovative method that is beginning to appear in cities around the world utilizes parking elevators in conjunction with valet parking to increase the available space within a lot. Parking elevators allow for two cars to occupy one space by elevating one car above the other.

22. On-Street Parking

Jurisdictions should allow for on-street parking to count towards a development's parking requirement, thereby reducing the number of off-street parking stalls required. Manage on-street parking with time limits, parking meters, and/or parking permits to maximize its utility.

22.1 Parking Reductions

Several jurisdictions that have implemented TOD zoning include reductions in the underlying parking requirements within a TOD overlay zone. Parking minimums are typically a percentage of the parking requirement set for the underlying zone and its applicable land use. Where additional parking has been demonstrated as a need, maximums allow for flexibility while preventing excessive amounts of parking. The tables illustrate the minimum reductions and maximum allowable increases from various jurisdictions.

Table 22.1.a Parking Requirement Examples

USE	OVERLAY		PHOENIX		TEMPE		MESA		DENVER, CO		BEAVERTON, OR	
	OVERLAY	Sq. Ft./Unit	CITY REQ. spaces	Sq. Ft./Unit	CITY REQ. spaces	Sq. Ft./Unit	CITY REQ. units/spc	Sq. Ft./Unit	CITY REQ. units/spc	Sq. Ft./Unit	CITY REQ. units/spc	Sq. Ft./Unit
Non-Residential												
Arcade/Billiards/Entertainment	1.0	300	1.5	table	1.0	180	1.0	375	n/a	n/a	n/a	n/a
Bank	1.0	333	n/a	n/a	1.0	250	1.0	375	1.0	300	1.0	333
Bar/Nightclub	1.0	100	1.0	50	1.0	50	1.0	75	n/a	n/a	n/a	n/a
Worship	0.5	seat	1.0	5 seats	1.0	100	1.0	75	1.0	1000	0.5	occupant
Convenience Store/Gas	1.0	286	2.5	service bay	1.0	250	1.0	375	1.0	300	1.0	333
Day Care	0.0	employee	1.0	300	1.0	500	1.0	375	1.0	600	0.0	employee
Furniture store	1.0	400	1.0	400	1.0	500	1.0	375	n/a	n/a	n/a	n/a
Health Club/Spa	1.0	200	n/a	n/a	1.0	125	1.0	1000	n/a	n/a	1.0	2.00
Lodge/Club	1.0	125	1.0	50	1.0	125	1.0	75	1.0	300	0.5	occupant
Manufacturing	1.0	667	1.0	1000	1.0	500	1.0	500	1.0	1000	1.0	6.25
Museum	1.0	333	n/a	n/a	1.0	375	1.0	75	1.0	600	1.0	1.70
Office General	1.0	333	1.0	300	1.0	250	1.0	375	1.0	500	1.0	3.70
Office, Medical	1.0	333	1.0	200	1.0	180	1.0	200	1.0	300	1.0	3.33
Research & Development	1.0	400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.0	5.00
Restaurant, Indoor	1.0	100	1.0	30	1.0	75	1.0	75	1.0	300	1.0	1.00
Restaurant, Outdoor	1.0	100	1.0	90	1.0	180	1.0	75	1.0	200	1.0	1.00
Retail, Indoor	1.0	333	1.0	200	1.0	250	1.0	375	1.0	300	1.0	3.33
Retail, Outdoor	1.0	333	1.0	100	1.0	500	1.0	375	n/a	n/a	1.0	3.33
School, Elem./Jr. High	1.0 + 1	classroom	1.0	1 per 25 stu	1.0	500	1.0	500	1.0 + 1	classroom	n/a	n/a
School, High/College	0.25	student	1.0	1 per 5 stu	1.0	250	1.0	250	1.0	600	0.2	student
Theatre	0.25	seat	1.0	3.5 seats	1.0	100	1.0	75	1.0	300	0.2	seat
Single-Family												
	n/a	n/a	2.0	du	2.0	du	2.0	du	1.0	du (alley >30'wd)	n/a	n/a
									2.0	du (lot <30'wd)	n/a	n/a
Multi-Family												
Studio	1.0	du	1.5	du	0.4	du	1.0	du	n/a	n/a	n/a	n/a
1 Bedroom	1.25	du	1.5	du	1.2	du	1.5	du	1.0	du	1.0	du
2 Bedroom	1.5	du	1.5	du	2.2	du	2.0	du	1.5	du	1.5	du
3 Bedroom	1.75	du	2.0	du	3.1	du	2.5	du	2.0	du	1.8	du
Guests	1.0	du	n/a	n/a	0.2	du	1.0	du	n/a	n/a	n/a	n/a
Other												
B & B	1.0	bdrm	1.0	bdrm	1.0	bdrm	1.0	bdrm	1.0	600	n/a	n/a
Boarding House	1.0	bdrm	0.5	bdrm	1.0	bdrm	2.5	bdrm	1.0	300	1.0	du
Fraternity/Sorority	1.0	bdrm	1.5	bdrm	1.2	bdrm	1.2	bdrm	1.0	800	n/a	n/a
Hotel/Motel	1.0	bdrm	1.0	bdrm	1.0	bdrm	1.0	bdrm	0.8	bdrm	1.0	du
Nursing Home	0.33	bed	0.5	bed	0.5	bed	1.0	400	n/a	n/a	0.3	bed
Elderly	0.5	bed	0.5	bed	0.5	bed	1.0	bdrm	0.3	du	0.5	bed
Live/Work	1.3	du	n/a	n/a	n/a	n/a	n/a	n/a	2.0	du	1.3	du
Live/Work Employee	1.0	employee	n/a	n/a	n/a	n/a	n/a	n/a	1.0	employee	n/a	n/a

Note:

Units of measurements for some uses in Phoenix, Tempe, and Mesa parking requirements varied by jurisdiction. In most cases, slight modifications to parking requirements were made for simplification purposes. Uses included in this chart were limited to those allowed by the TOD Overlay Ordinance.

Denver, CO parking requirements are for the Mixed Use District.

Beaverton, OR parking requirements are for the Station Community District.

Table 22.1.b: Parking Reductions

Source	TOD Overlay Parking Requirement
Portland, OR	min. 50% w/in 500 ft. of LRT Alignment
	max. 150% w/in 500 ft. of LRT Alignment
Hillsboro, OR	min. 30% w/in1300 ft. of LRT stn. site boundary
	max. 125% w/in 1300 ft. of LRT stn. site boundary
Seattle, WA	20% w/in 800 ft. of bus stops w/frequent transit service

22.1.1 Shared Parking

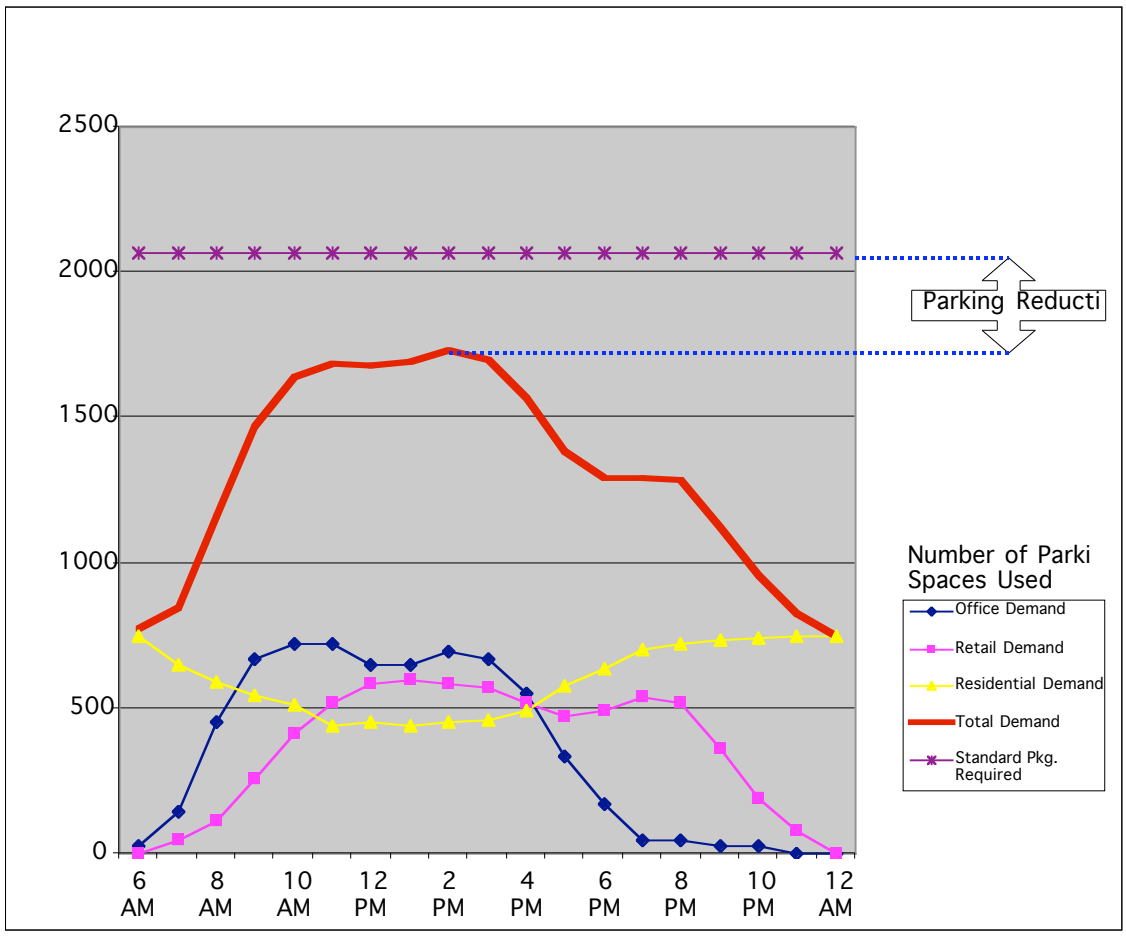
Shared parking is an effective tool for reducing the total amount of parking within a mixed-use district. Reducing the amount of parking can result in a better pedestrian environment and allow for more efficient development. Shared parking recognizes that some uses have their peak parking demands during different times of the day and the week. If these uses exist within a single development or parking district, the total amount of parking can be reduced within the development.

Research conducted by Robert Cervero from the University of California at Berkeley in 1993 indicated that an American walks an average of 800 feet (1/8 of a mile) from their car to work. This refutes the idea that workplaces require on-site parking for employees, and supports the idea of shared parking facilities. Improvements made to the pedestrian realm (i.e. improved lighting, shade, visual interest along paths, etc.) will reduce perceived distances and increase the actual distance an employee is willing to walk by creating a pleasant and enjoyable environment for walking. Also, the "perception" of auto dependency is fostered where the urban landscape is dominated by parking lots.

22.1.2 Mixed-Use Development

Compact, mixed-use development can reduce parking demand by making shared parking feasible. Typical parking standards specify the number of required spaces per square foot of use based on peak hour demand estimates for each separate use, thereby compounding the need for parking. Mixed-use development, on the other hand, will often include uses that have peak parking demands at different times. As an example, a mixed-use development on a parcel can take advantage of this by having ground floor retail and upper-story office development. Reductions can be justified where employees arrive by transit or auto, but shop and dine in the uses below. In turn, during more popular weekend shopping periods, the offices will typically be vacated freeing parking spaces up for weekend users.

Chart 22.1.2: Shared Parking Reduction



22.1.3 Parking Agreements

In addition to shared parking within a single development, two or more private and/or public entities can enter into an agreement to share parking facilities. Regulating agreements to avoid conflicting peak use times is a key to a successful shared parking arrangement. Agreements can occur between private businesses or between the transit provider and private businesses. As an example, the transit station's park-and-ride facilities will primarily be used during daytime hours. Evening entertainment uses can take advantage of this by allowing patrons to use the lots during these times. In addition, parking agreements can aggregate spaces for valet operations, which tend to utilize parking areas more efficiently.

Shared or aggregate parking can also minimize the land area required and can reduce development expenses by spreading the costs between owners. Portland, Oregon allows shared parking under their "Joint Use Parking" regulation. This permits two or more uses to share parking facilities with the condition that use times differ to avoid demand conflicts.

22.1.4 Aggregate Facilities

Another form of "shared parking" is aggregate facilities, which create a more efficient parking configuration. Amongst adjacent and nearby properties there is the opportunity to reduce curb cuts and reduce overall parking requirements by connecting parking lots and sharing parking between uses. Aggregating parking facilities can also minimize their impact on the street by reducing the amount of area through combined driveways and travel lanes, and minimizing the number of unused parking spaces at any one time.

22.1.5 Parking Substitution

Jurisdictions can also allow for parking reductions when developments offer pedestrian amenities in exchange for parking spaces. Both developers and the community can benefit from this allowance. Developers can reduce their parking costs by offering less costly pedestrian improvements, while the community can gain these amenities and reduce the presence of cars. In Portland, Oregon, a plaza space can reduce required spaces by 10 percent with the condition that the plaza is directly connected to a transit facility Portland allows the substitution of bicycle parking spaces for auto spaces at a 5 to 1 ratio. In allowing the substitution of bicycle facilities for parking, jurisdictions should also require businesses to provide shower facilities for employees who choose to commute via bicycle.

22.2 Parking Prohibitions

The prohibition of parking within the immediate area of a transit station can be argued based on the assumption that the majority of users in the area will be arriving via transit or from within the TOD on foot. Concentrating a mix of uses around transit stations can be a significant factor in encouraging more foot trips, lessening the need for parking facilities for both the station and the commercial uses surrounding it. If park-and-ride parking is provided it could be located in a shared parking facility some distance from the transit station. This also increases pedestrian activity close to the transit station as people park at the fringes and walk to the stations or uses in the area. The following table illustrates the prohibition of parking for some jurisdictions in the Northwest.

Table 22.2: Parking Prohibitions

Parking Facility	Seattle	Portland	Hillsboro	Washington County
Principal Use Parking	Prohibited w/in entire TOD overlay district	Prohibited w/in 200 ft. from LRT Alignment		
Surface Parking Lots			Prohibited w/in 1300 ft. of LRT Station	Prohibited w/in 1300 ft. of LRT Station
Parking Structures			Prohibited w/in 400 ft. of LRT Station	Prohibited w/in 300 ft. of LRT Station
Accessory Parking on Surface Lot		Prohibited w/in 500 ft. from LRT Alignment		

Note: Blank cells indicate that requirements from underlying zoning apply.

23. Off-Street Parking Location

23.1 Site Planning

In station areas where densities are low and property values do not warrant the expense of a structured parking facility, surface parking is the most feasible alternative. This has typically meant large amounts of land being given over to parking facilities. One way to minimize their impact on the pedestrian environment is to configure parking at the rear or side of a lot so that the continuity of building walls can be maintained along street frontages. The increased activity and visual interest associated with continuous building frontage can give the perception of shorter distances as opposed to crossing expanses of parking and stretches of blank façades. This helps to make walking a more attractive mode of transportation. At times, parking lots abutting sidewalks will be required due to lot configurations or limited site area. In such cases, visual exposure to surface lots should be minimized and landscape buffers consisting of trees, shrubs, groundcover, and structures should provide a sense of separation between the sidewalk and the parking lot (See *Section 3.3.3.2.11* in *Chapter VI. Standards and Guidelines* of this document.)

The Seattle, Washington Municipal Code contains a number of regulations for surface parking on lots containing more than one street frontage. The code requires that side-lot parking be located along the more minor commercial street containing the lesser commercial frontage. When commercial frontage is equal, decisions must take into consideration the character of both streets – which is oriented more towards the pedestrian, which frontage may have more potential pedestrian/auto conflicts, and the relative traffic capacity of a street as an indicator of its role within the neighborhood's transportation network.

23.2 Structured Parking

Higher densities, land values, and demand can often justify building structured parking facilities in TODs. Structured parking is favored within TODs when economically viable, because they allow less land to be used for parking. However, jurisdictions should require that other active uses occupy the ground-floor level fronting onto adjacent streets. As safety is a major consideration for pedestrians coming off of transit and strolling around the neighborhood, particularly during the evening, these uses should provide activity along the street. Restaurants, cafes, and shops can be allowed to spill activity onto the sidewalk and engage the pedestrian, all the while concealing parking behind and above eye-level. Parking structures can be integrated into the building or as stand-alone facilities.

The City of Hillsboro, Oregon allows mixed-use parking structures next to station areas only with the provision that the ground-floor will contain active uses such as offices and/or commercial uses.

24. Location of Vehicle Access

Near a transit station, driveways should be minimized. In any case, parcels closer to the station should generally be permitted a reduction in the parking requirement, therefore requiring a lesser number of driveways.

Excessive curb cuts along a street both impede auto, pedestrian, and bicycle traffic flow and create conflict points between pedestrians and cars. Driveways also interrupt the continuity of building walls creating voids where enclosure is important. Therefore, vehicular access within the core of the district and along main pedestrian and commercial routes should be minimized. For example, the City of Portland, Oregon prohibits auto access to parking within 75 feet of a light rail alignment. Similar considerations to those given in *Discussion Point #23-Off-Street Parking Location* should be given to driveways. Locating driveways along lesser-traveled pedestrian routes will minimize their impact. Where an alleyway is located, driveways may be fed from these entry points.

VI. Design Standards and Guidelines

The following Design Standards and Guidelines provide a starting point from which individual jurisdictions can develop a new set, or modify similar existing documents that they may have for village centers or mixed-use development, Standards and Guidelines that are specific to TOD Overlay Districts. These Standards and Guidelines generally relate to issues that are not defined by the zoning ordinance and may, therefore, be utilized to further guide the implementation of TOD in a manner that supports its intention.

A overarching goal of these standards and guidelines is to create memorable places and to enhance human comfort. We need to strive to create places that are comfortable and attractive for people to use in their daily lives with attention given to creating a clear identity for the TOD. TODs also need to include places for people to enjoy at a leisurely pace where they can interact with friends and passers-by.

In undertaking this task, each individual jurisdiction will need to decide which items should be **required – standards**, and which are **desired – guidelines**. The decision will depend on whether the design issue is of essence to TODs, or whether there is flexibility in its resolution. The rationalization for the standards and guidelines recommended here should guide jurisdictions in making this choice, although it should be noted that issues will vary as frequently as the physical, economic, and social aspects of a place. For this reason, it is highly recommended that the TOD discussion points serve as a basis for the determination whether a recommendation offered below becomes a standard or a guideline. The TOD Discussion Points are intended to convey the essence of what makes a place pedestrian- or transit-friendly. Jurisdictions should also refer to the document "Pedestrian-oriented Design (PeD) Standards and Design Guidelines," produced by Valley Metro, and the bibliography included at the end of this document to gain a better understanding of the nuances that make an area pedestrian- and transit-oriented.

In the following section, standards are "shall" statements, and guidelines are "should" or "may" statements.

1. Land Use

1.1 Land use changes **should** occur at mid-block where possible to minimize conflicts and to create a more unified streetscape. Both sides of a street **should** consist of similar types of uses to minimize conflicts between uses that generate more frequent traffic, such as retail and employment, and uses that desire a more tranquil environment, such as single-family residential.

1. 2 Transitional uses **should** be used as buffers between incompatible uses particularly where residential uses abut noxious or heavily trafficked uses, such as industrial and employment development. Transitional uses include live-work or neighborhood-serving retail.

2. Street And Circulation Design

2.1 Circulation Network

The circulation network within a TOD is the framework which interconnects its uses. The quality and connectivity of the network determines the level of accessibility for all modes of transportation (pedestrian, bicycles, transit, service, and automobile).

2.1.1 New development within the TOD area **shall** contain a fine-grained, interconnected street system that allows maximum accessibility for all users (pedestrians, bicyclists, drivers).

2.1.2 Streets **shall** provide relatively direct connections to destinations. In other words, streets **shall** be part of a fine, interconnected circulation system that minimizes excessive curves or dead-ends, which elongate distances.

2.1.3 Streets **shall** be multi-purpose and serve multiple users. They **shall** provide a comfortable place for persons to reach their destinations regardless of their travel mode of choice.

2.1.4 Streets in new developments **should** connect to surrounding existing neighborhoods to avoid creating an isolated environment and making long, round about circulation systems.

Figure 2.1.4.a: *A disconnected street pattern where residents must drive to get to their destination.*

Figure 2.1.4.b: *An interconnected street pattern facilitates walking to shops and public transit.*

2.1.5 New blocks **should** be approximately 300 to 500 feet in length. Short blocks are the "other side of the coin" of an interconnected circulation system as they allow for a greater number of connections than longer blocks. Short blocks also reinforce for pedestrians that they are making progress in reaching their destination, making the walk seem shorter and more attractive.

2.1.6 Public or private accessways (also called pedestrian pass-throughs and pedestrian connections) **should** be used to connect pedestrians to destinations where blocks cannot be maintained at less than 500 feet in length. These **should** be facilitated by using easements through private property. (See *Section 3.2 Accessways* in this chapter.)

2.1.7 Convenient physical connections and prominent visual connections **should** be created, to the extent possible, between Bus and LRT facilities where it is not possible to consolidate them into a central hub.

Figure 2.1.7: *A pedestrian pass-through in a suburban mall where a city has encouraged walking within their historic downtown core.*

2.2 Roadways

For the purposes of this section, roadways shall mean travelways for motorized vehicles and exclude sidewalks and walkways. The design of roadways is important for the bicyclists that use them as well as motor vehicles. Of primary consideration to pedestrians is the ability and condition of crossings and the design and geometry of the curb line – the place where the automobile zone and the pedestrian zone come together.

2.2.1 Posted speed limits of 15 to 20 mph **should** be utilized in zones of high pedestrian activity, where pedestrians should dominate the environment. Where parked cars, landscaping, and specialized crossings create a comfortable pedestrian environment along “main streets”, a broader range of up to 30 mph **may** be posted.

2.2.2 The radii of a curb at a street corner **shall** take into consideration pedestrian safety and needs. Reducing the turning radius of an intersection corner can minimize the distance the pedestrian must cross. Traffic engineers prefer wider radii (>25 feet) that accommodate swift turns by cars and other motorized vehicles. This however not only increases the distance pedestrians have to walk, but it also puts them at risk of greater bodily injury as the greater maneuverability of large turning radii allow drivers to turn corners at higher speeds. Therefore, curb radii at intersections within pedestrian areas **should** be 10 to 15 feet.

2.2.3 Curb-to-curb distances **should** be minimized in order to avoid having the roadway dominate the public landscape. Narrow curb-to-curb distances also create shorter, more comfortable crossing widths for pedestrians. Often, street corners that are separated by multiple-lane arterials, wide travel lanes, or

added space for shoulders or future expansions, create an imposing crossing width for pedestrians, particularly the elderly. Such features are also unnecessary within the TOD.

Figure 2.2.3: *Bulb-outs and diagonal parking narrow the width of street crossings giving pedestrians a sense of belonging even while crossing the roadway.*

2.2.4 Side Access Lanes (Boulevards) **may** be used to reduce the effective width of roadways and create pedestrian-oriented realms along major arterials. Boulevards can create pleasant environments by buffering residential and commercial uses from roadways carrying large amounts of traffic.

2.3 On-Street Parking

On-street parking provides more activity on the street, supports adjacent commercial uses, and provides a buffer for pedestrians between the sidewalk and moving traffic. On-street parking not only maximizes the availability of parking, and therefore minimize the need for off-street parking, cars parked next to the sidewalk also act as buffers to moving traffic giving pedestrians a sense of safety as they stroll, shop, and converse on the sidewalk.

2.3.1 On-street parking **shall** be required along all streets.

2.3.2 Treewells placed within the parking lane every 2 to 3 spaces **may** be used to visually narrow the width of a street. Trees can also serve to provide shade for parked cars and sidewalk activity. Tree well spacing **should** not exceed 2 spaces where street trees are not present along adjacent sidewalks, and 3 spaces where the adjacent sidewalk is lined with trees.

2.3.3 On streets where right-of-way widths allow, diagonal and perpendicular parking **may** also be used to minimize roadway widths. In such cases, bulb-outs **should** extend to the roadway edge of the parking lane.

2.4 Pedestrian Crossings

Safe and convenient pedestrian crossings help to create a pedestrian-friendly environment within the TOD. The following standards and guidelines shall be applied at both corner and mid-block crossings.

2.4.1 Crossing opportunities **shall** be provided at every intersection and at the middle of block (mid-block crossings) where block lengths are greater than 500 feet in length. This will decrease the temptation, and sometimes necessity, to jaywalk.

Figure 2.4.1.a: *Pedestrians will take the opportunity to cross where they need to, with or without a formal crosswalk.*

Figure 2.4.1.b: *Here, the movement of cars took precedence over people, conveying the pedestrians do not belong here.*

2.4.2 The width of crosswalks **shall** be a minimum of 12 feet wide. Widths **should** be increased where there are greater amounts of pedestrian activity.

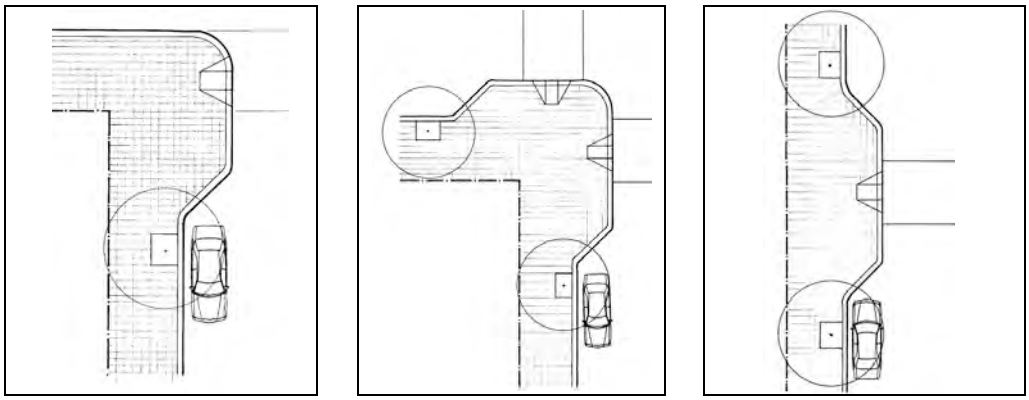
2.4.3 Crosswalks **should** be clearly demarcated with special pavers to visually and perceptibly announce a change in 'domain' to that of the pedestrian. At a minimum, striping in a "ladder" configuration **shall** be provided. This is particularly important at mid-block crossings, where drivers may not expect a crosswalk.

2.4.4 Prior to installing mid-block crossings, consideration **shall** be given to the following: sight distance, vehicle speed, accident records, illumination, traffic volumes, nearby pedestrian trip generators, distance to next crossing, etc. Mid-block crossings are not appropriate for busy arterials, but better suited for streets with lower traffic speeds. The context should be studied for appropriateness.

2.4.5 ADA-compliant wheelchair ramps (two per corner preferred) **shall** be provided at all crosswalks. If a raised central median extends into the crosswalk, an ADA-compliant channel must be provided through the median.

2.5 Bulb-Outs

Bulb-outs reduce pedestrian crossing distances and help to control traffic speeds. Bulb-outs can also enlarge sidewalk area where amenities **may** be placed.



"Half corner *"Full corner* *"Mid-block*

Figure 2.5: *Bulb-Outs.*

2.5.1 Corner and mid-block bulb-outs **should** extend into the street for the width of a parking lane, or at a minimum of 5 feet, in order to provide for a shorter crossing width, increase pedestrian visibility, provide more space for pedestrians queuing, and a place for sidewalk amenities and planting.

2.5.2 Pedestrian amenities **may** also be placed within bulb-outs where sidewalk widths are extended into the parking lane and where bulb-out lengths allow. (See also *Section 2.9.3* under *Sidewalk Amenities* in this chapter.)

Figure 2.5.2: *A bulb-out provides an opportunity for dining and shade.*

2.6 Signalization

Appropriate signal timing and location is important to all modes of transportation.

2.6.1 Signal timing **should** be long enough to allow a pedestrian with limited mobility to cross the street.

2.6.2 Pedestrian signals **should** also be at a cycle frequency that would dissuade jaywalking or crossing against a stoplight.

2.6.3 Crossing signals or signage are commonly provided at intersections, but **shall** also be provided at mid-block crossings. Mid-block crossings **should** be given special attention with signalization or signage and **should** be well publicized. Pedestrian-activated signals, stop signs, stop lights, and 'Ped Xing' warning signs **should** be considered where mid-block crossings are located.

2.6.4 Signalization **shall** consider average walking speeds which have been historically measured at 4 feet per second. However, a reduced speed such as 3.0 or 3.25 feet per second **should** be applied to compensate for the elderly and disabled.

2.7 Pedestrian Refuges

Pedestrian refuges in wide or busy streets improve safety for pedestrians and vehicles.

2.7.1 A pedestrian refuge island **should** be provided when pedestrians need to cross distances of more than two traffic lanes traveling in one direction. Refuges can take on several different forms:

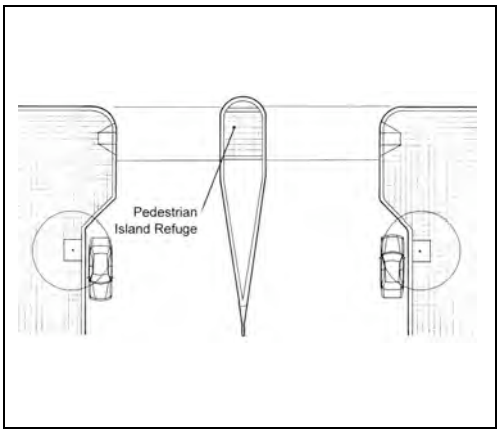


***Figure 2.7.1**: Center Median Island Pedestrian Refuges. Pedestrian activated signals, special paving and striping, and median landscaping create a pleasant and safe environment for pedestrians (right). The intersection is frequently used because it connects two meaningful destinations.*

2.7.1.1 Center Median Islands – where possible, center medians **should** provide a waiting area for pedestrians waiting to cross the second half of the street.

2.7.1.2 Right-turn Channel Islands – where traffic is allowed a free right-turn at intersections, islands **should** be provided for pedestrians waiting to cross.

However, right-turn channels **should** be discouraged within the TOD as these devices typically allow cars to merely yield as they turn. Drivers thus need not take their time to thoroughly watch for pedestrians while making the turn.

2.7.1.3 Side Access Lane medians – where side access lanes (boulevards) are constructed, a waiting area **shall** be provided on the median.

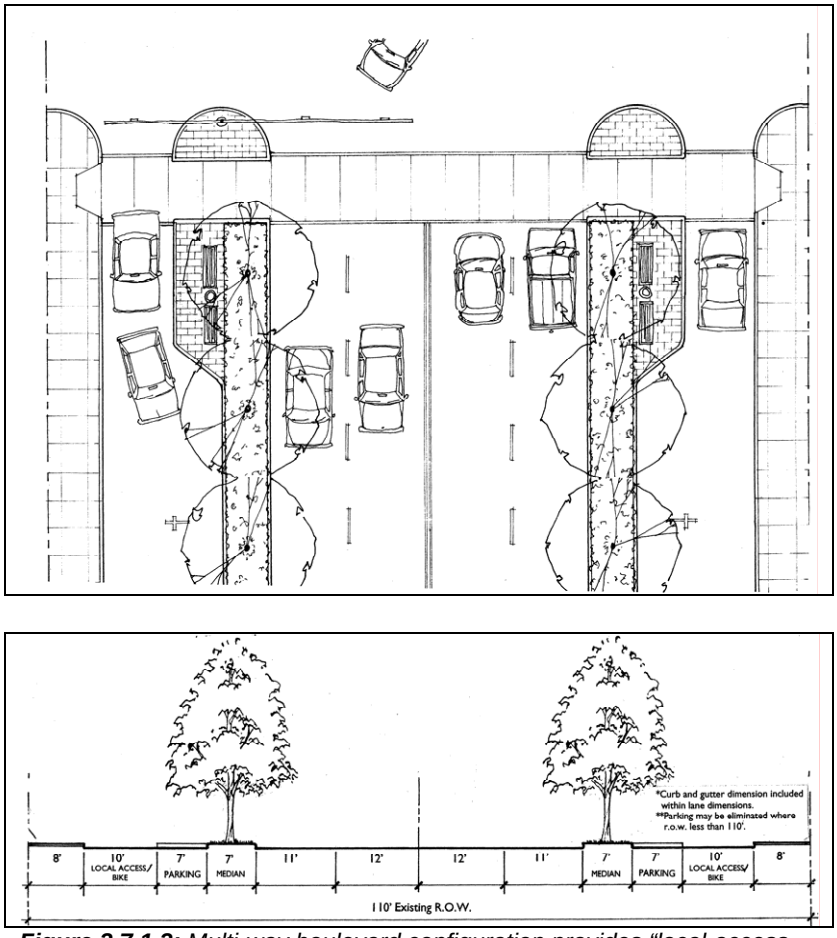


Figure 2.7.1.3: *Multi-way boulevard configuration provides "local-access lanes" with on-street parking, reducing access conflicts between through-traffic, local traffic, and pedestrians.*

2.7.2 Pedestrians will typically feel safer when placed above the grade of the roadway, therefore where possible, pedestrian refuges **should** be 6 inches above the roadway grade to provide a comfortable grade separation between moving vehicles and pedestrians.

2.7.3 Where it is not possible to include ramps and waiting pads that meet ADA requirements, waiting areas **should** be at-grade with the roadway (channels), although slopes **should** facilitate drainage, and planting or bollards **should** buffer pedestrians from moving traffic.

Figure 2.7.3: *A channel within a median facilitates crossing the street.*

2.8 Bicycle Circulation and Amenities

Improved bicycle access encourages transit ridership by extending the "reach" of transit riders into areas that are farther than a comfortable walking distance. In planning for bicycle facilities, bicyclists should be given equal consideration to drivers in terms of safety and amenities. As parking for automobiles is planned in a manner that is convenient and easily accessible to drivers, so should amenities for bicyclists be planned in terms of ease of use, proximity to destinations, durability of materials, safety (lighting, access, etc.), and visibility.

2.8.1 Where bicycle lanes are provided they **shall** be a minimum 5 feet in width.

2.8.2 Bicycle racks **shall** be provided at strategic spots and **should** be placed at intervals close enough such that bicyclists can easily find a place to park their bicycles.

2.8.3 Racks **should** be well-maintained to avoid impediments to bicycle use.

Figure 2.8.3: *Bicyclists should be treated with equal importance to the automobile. Parking should be conveniently located and easy to use, and roadways should be safe for riding year-round.*

2.9 Sidewalks

Safe and direct sidewalk connections are of key importance to creating a transit-oriented and pedestrian-friendly environment. Sidewalks should support activities that will occur in the area and provide a comfortable place for pedestrians to take part in various activities. Sidewalks within a residential area should offer a place where residents can stroll and kids can play or hang out. Sidewalks in a pedestrian-oriented commercial area should allow for strolling, window shopping, hanging out, conversation, sitting and dining.

Figure 2.9.a: *A street where commercial uses are geared toward the automobile. The sidewalk is an underused conduit.*

Figure 2.9.b: *A sidewalk that is for pedestrians with amenities, shade, and a buffer from the roadway. The sidewalk becomes a place.*

NOTE: Photos also demonstrate the amount of shade available to the pedestrian in both situations.

2.9.1 Sidewalk Design

Sidewalks should be provided along both sides of the street and shall be continuous. An exception may be made in lower intensity residential neighborhoods where pedestrians can be safe walking on the roadway or on shoulders that are typically not grade-separated. This will typically happen outside of the TOD.

2.9.1.1 Sidewalks **shall** provide a continuous connection along roadways.

2.9.1.2 "Wandering" sidewalks **shall** not be used in TODs as they tend to elongate walking distances.

2.9.1.3 The surface of the pathway **should** remain continuous even at driveways without unnecessary jogs, slopes, level changes, or paving changes.

2.9.1.4 Box curbs **should** be utilized, as roll curbs allow cars to encroach on the pedestrian realm. In some cases, bollards **may** be needed where grade separations are not possible, where extra protection is needed from moving vehicles, or in places that need to be called out as unique and special spaces.

2.9.1.5 Special paving **should** be used to highlight a place, create interest, and generally define areas as special and belonging to the pedestrian.

2.9.2 Sidewalk Widths

Wide sidewalks convey to pedestrians that they are important users of a place. Sidewalks within the TOD serve not just as the main pedestrian conduit of the neighborhood, but also as a place where people can partake in public life.

Minimum sidewalk widths are given in *Section 11. Street and Sidewalk Regulations* in *Chapter IV. Overlay Ordinance*. The following guidelines offer recommended sidewalk widths that allow for different types of activities to occur and. The guidelines below can be used to determine widths within commercial areas if more than the minimum sidewalk width can be accommodated.

2.9.2.1 10 feet of sidewalk width can comfortably accommodate two-way pedestrian traffic, and allow window shoppers and street furnishings such as seating, trashcans, tree grates, lighting, without violating the minimum 8-foot clear sidewalk space defined within the Overlay Ordinance.

2.9.2.2 12 feet of sidewalk width allows adjacent food service businesses to provide outdoor dining or retail businesses to display their goods without impeding pedestrian flow and other activity to occur. Widths beyond 12 feet can accommodate a greater variety of activities within a comfortable space including walking, window shopping, sitting, dining, and street furnishings such as seats, planters, kiosks, newspaper racks, and signs.

2.9.3 Sidewalk Amenities

Amenities within the public realm of the sidewalk are as important as building design and articulation in terms of creating pedestrian-friendly environments. Providing amenities along sidewalks creates the sense that the pedestrian belongs there. Often times, providing pedestrian amenities will attract people to use the street as their "living room"

where they meet friends, read the paper, window shop, and generally occupy the space as an important part of community life. Persons lingering will, in turn, attract others to the place. Pedestrian amenities include, seating, trash receptacles, drinking fountains, bollards, planters, bus shelters, lighting (see *Section 7. Lighting* in this chapter), kiosks, etc.

2.9.3.1. Seating

2.9.3.1.1 Seating **shall** be provided adjacent to major destination points such as department stores and restaurants where they are often necessary and where they will not be underutilized or neglected.

2.9.3.1.2 Seating **shall** be made of durable, high-quality materials which visually reinforce nearby buildings.

2.9.3.1.3 Seating **may** be incorporated as part of building form or landscape features such as seat-walls as an option to freestanding benches.

2.9.3.1.4 See also *Section 5.3.2 Amenities* in this chapter.

2.9.3.2. Miscellaneous Furnishings

2.9.3.2.1 The placement of pedestrian amenities **should** not be regimented and **should** instead be located according to the needs of a specific location. However, amenities **should** be frequently available to users.

2.9.3.2.2 Amenities **may** also be integrated into building design and landscape features, such as low retaining walls serving for seating or leaning.

Figure 2.9.3.2.2: *A seat-wall allows pedestrians to gather and rest.*

2.9.3.2.3 The design characteristics and style of street amenities **should** reflect the local character of the surrounding neighborhood, district, and region.

2.9.3.2.4 Pedestrian amenities **may** also be placed within bulb-outs where sidewalk widths are extended into the parking lane. These spaces **may** accommodate seating, planting, trash receptacles and other amenities where high foot traffic will not create conflicts. Dining facilities will require large bulb outs in order to minimize conflicts between high amounts of foot traffic at crossings and the privacy needed by diners.

2.9.3.2.5 Street furnishings **shall** consider car overhangs when placed near the curb.

2.9.4 Street Landscaping

Street trees are indispensable in creating a walkable, attractive, and comfortable street, particularly for sunnier climates like Valley Region. As a passive cooling device, trees can lower temperatures and can reduce the need to air condition buildings during the milder summer days. Street trees can create places that are rich in texture merely by shedding a dappled light on the landscape and provide a sense of protection, acting as buffers to the roadway in a similar manner as parked cars and light standards, particularly if they are planted close together.

2.9.4.1 Sidewalks **shall** contain a minimum of approximately 50% intermittent shade as measured on the ground at the pedestrian level. Shade **may** be created using landscape and/or architectural elements.

Figure 2.9.4.1: *Dappled shade cast by mature tree canopies create a comfortable pedestrian environment. The trees in the image are casting approximately 80% shade on the ground.*

2.9.4.2 At a minimum, a landscape buffer in the form of tree wells containing street trees, **shall** be provided along the curb-side of sidewalks.

Figure 2.9.4.2.a: *A sidewalk with no landscape buffer feels like it is a part of the roadway.*

Figure 2.9.4.2.b: *A landscape buffer with closely planted street trees, creates a sense of separation between the sidewalk and the roadway.*

2.9.4.3 Tree grates **should** be used in commercial areas to extend usable sidewalk space. Tree wells with landscaping are more appropriate within residential areas.

2.9.4.4 Landscape buffers **shall** not reduce the minimum clear walking space of a sidewalk as defined within the Overlay Ordinance.

2.9.4.5 Street trees **should** be planted between 15 to 25 feet on center, depending upon species, to allow a continuous canopy.

2.9.4.6 Trees **should** be protected from car doors and overhangs with tree guards or, initially, with tree stakes.

2.9.4.7 A minimum of 36 square feet of soil **should** be provided for each tree whenever possible. Tree well size **should** vary depending on species and soil conditions.

2.9.4.8 Topping and severe pruning **should** be avoided. Proper maintenance of trees **should** allow trees to retain their natural form.

2.9.4.9 At a minimum, side Access Lane medians on boulevard streets **shall** be planted with trees, shrubs, and groundcovers.

3. Site Design

3.1 Building

Buildings are important for establishing a comfortable and attractive streetscape for pedestrian activity. They define the character and 'feel' of streets as much as the street and features in the landscape. A row of buildings can create dramatic sight-lines to

important features at the end of a view, create 'enclosure' to clearly define a 'place,' and make a street more memorable.

3.1.1 Commercial Buildings

3.1.1.1 Buildings **should** have a strong relationship to the sidewalk and other public spaces to create well defined pedestrian places. This means that buildings **should** form a continuous building wall with few interruptions from parking lots and driveways within commercial areas.

3.1.1.2 Building heights **should** effectively define the street and visually narrow it. The wider the street, the taller the buildings should be to define the street. A vertical height-to-street width ratio appropriate for the Valley Region would be 1:3. For example, a 66-foot wide street could achieve a visual definition with 22-foot high buildings (a two-story building or a one-story building with a taller roof or parapet wall). The lower the ratio (i.e. 1:2) the more definition achieved. It is more visually appealing for building to be at a relatively consistent height with variation indicating the importance of the use within buildings and creating gateways.

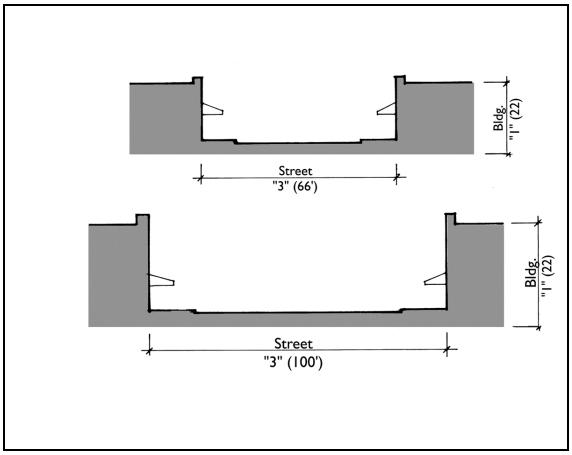


Figure 3.1.1.2: *Building height to street width ratio.*

3.1.1.3 In general, building facades **shall** be parallel to the street. Courtyard type multi-family residential **may** be excepted.

3.1.1.4 Buildings **should** be used to highlight prominent features, and important sight lines and view angles.

3.1.1.5 Primary entrances **should** generally face pedestrian streets and public open spaces rather than parking lots in order to emphasize the primary importance of the pedestrian realm.

3.1.2 Residential Buildings (single- and multi-family)

3.1.2.1 Site plans for residential subdivisions **shall** be designed with building architectural variations and site variations to avoid a "cookie cutter" or repetitive appearance.

3.1.2.2 Street fronting side yards (yards on corner lots) and the design of the building façade **shall** be similar in design and quality to a typical front yard of a home. These side yards are important to the character of residential areas because they are the most visible yards.

3.1.2.3 Primary walkways **should** connect entrances to the sidewalk rather than to driveways.

3.1.2.4 Centralized, drive-up mailboxes **should** be discouraged.

3.1.2.5 All mechanical equipment and meters **shall** be located to minimize visual impacts from streets, sidewalks and other public spaces.

3.1.2.6 Outdoor entrances to residential developments **should** be clearly defined so that they provide a sense of transition between the public realm of the street and the private realm of the homes and so they are easy to find.

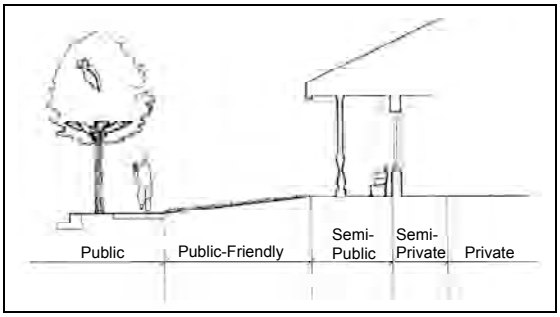


Figure 3.1.2.6: *Pedestrian-friendly transition zones.*

3.2 Accessways (Pedestrian Pass-Throughs)

3.2.1 Accessways, or Pedestrian Pass-throughs, can minimize walking distances by allowing pedestrians access between buildings or lots. Accessways **should** be attractive spaces and places where pedestrians feel safe.

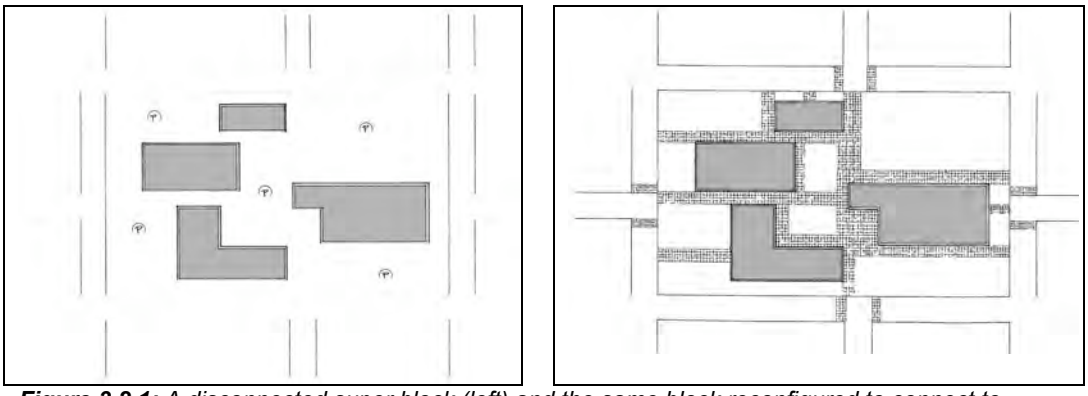


Figure 3.2.1: *A disconnected super block (left) and the same block reconfigured to connect to surrounding neighborhoods (right).*

3.2.2 Accessways **should** visually and physically connect pedestrians with meaningful destinations such as, open spaces, parallel streets, shops, and parking lots.

Figure 3.2.2: *Pedestrian pass-throughs can serve more than transient traffic. Here pass-throughs accommodate dining, sitting, and flower sales. The pass-through on the right is at the end of a mid-block crossing.*

3.2.3 Accessways **should** be at least 10 feet wide, and since they are removed from the existing street pattern, **should** be as straight as possible to improve sightlines and security.

3.2.4 Where widths allow, accessways **should** accommodate active uses such as small-scale sales or shop fronts, sitting, and dining.

3.2.5 Accessways **shall** be visible from publicly accessible streets for safety.

3.2.6 Accessways **should** avoid terminating at the backs of buildings, loading areas, and storage and refuse areas.

3.2.7 Accessways **shall** be attractively landscaped and paved so that they do not become neglected or dangerous spaces.

3.2.8 Adequate lighting **should** make pedestrians feel safe and comfortable when walking and viewing into accessways. (See *Section 7. Lighting* in this chapter.)

3.3 Surface Parking Lots

The design of parking within Transit-Oriented Development is a key consideration in creating pedestrian-friendly places. Contrary to what some may expect, TODs must recognize the use of the automobile as the major means of transportation for a large segment of the population. In order for retail, employment, and residential uses to be successful in the market, adequate and convenient parking must be provided within the TOD. However, the "perception" of auto dependency is fostered where the urban landscape is dominated by parking lots, therefore, their presence must be controlled and minimized within the TOD.

3.3.1 General Requirements

3.3.1.1 Parking lots **should** be designed with the possibilities of future infill development in mind. The major circulation routes in large parking lots **should** be designed to allow future conversion to streets and the construction of new buildings within a portion of existing surface parking lots. The interconnectivity between parking areas is important to maximize the utility of shared parking.

3.3.1.2 Parking lots on adjoining properties **shall** be interconnected whenever possible to allow pedestrians to trip link by parking their car in one lot and making several trips on foot, and to offer drivers more flexible parking choices.

3.3.1.3 Interconnected lots **shall** minimize the number of driveway access points to and from adjacent streets.

3.3.1.4 As properties redevelop, their parking **shall** be designed to allow connections with parking lots on adjacent properties.

3.3.1.5 In newly developed areas parking lots of adjacent properties **shall** be interconnected.

3.3.1.6 The use of permeable paving to reduce surface run-off **should** be used for parking stall surfaces. Where possible, drainage **shall** be directed to planting areas to maximize percolation.

3.3.1.7 Parking lots **shall** be well-lit to create a safe environment for persons going to and from their cars. (See *Section 7. Lighting* in this chapter.)

3.3.2 Pedestrian Circulation

While parking is a reality within today's real estate markets and public demand, parking lots need not be the placeless, heat islands that are commonly found in our landscapes. Parking structures and surface lots can be designed to safely and comfortably allow pedestrians to move from their cars to surrounding destinations and positively contribute to a sense of place.

3.3.2.1 Clearly delineated and convenient walkways **shall** be provided from parking areas to the entrances of establishments as follows:

3.3.2.1.1 Walkways running parallel to the parking rows (perpendicular to parked cars) **should** be provided for every four rows, and walkways running perpendicular to the parking rows (parallel to parked cars) **should** be no further than 20 parking stalls apart. Walkways **should** also be provided at the edges of parking lots.

3.3.2.1.2 Walkways **shall** be raised to standard sidewalk height of 6 inches and provide a minimum 5-foot clear space from car fenders.

3.3.2.1.3 Where the path bisects the travel lane, crossings **should** be clearly delineated by a contrasting color, pattern, material change, and/or be raised slightly to form a "speed table".

3.3.2.1.4 Walkways **shall** lead to meaningful destinations such as building entrances, sidewalks, plazas, open space and other parking lots, avoiding loading and service areas.

3.3.2.1.5 Walkways **shall** be shaded to provide a comfortable pedestrian environment by trees or landscape structures. (See *Section 3.3.3 Parking Lot Landscaping* following this section.)

3.3.2.1.6 Planting **should** provide a buffer from travel lanes and parked cars. (See *Section 3.3.3 Parking Lot Landscaping* following this section.)

3.3.3 Parking Lot Landscaping

3.3.3.1 General Requirements

3.3.3.1.1 Well-maintained landscape elements such as trees, shrubs, groundcover, and landscape structures within a parking lot and along pedestrian pathways **should** be utilized to reduce the perceived size of the lot and create a more pleasant microclimate for pedestrians.

Figure 3.3.3.1.1: *Pedestrians must not only cross an expanse of deserted parking, they must also battle the morning sun.*

3.3.3.1.2 All parking lots greater than 12 stalls (approximately one eighth of an acre or about 5,000 square feet) **shall** provide a tree canopy that will cover 50% of the lot at time of the trees' maturity, approximately 10 years. This will affect the spacing of the trees depending upon the species and their growing habits.

Figure 3.3.3.1.2: *Trees within a parking lot create comfortable microclimates for cars as well as pedestrians.*

3.3.3.1.3 To effectively achieve this coverage, trees **should** be planted "orchard style" (i.e. evenly spaced throughout the parking lot.)

3.3.3.1.4 Trees **shall** be planted along the interior pedestrian paths to provide needed shade. Trees **shall** be planted such that at least 50% of the path is intermittently in shade. (See *Section 3.3.2.1.5* in *Pedestrian Circulation* in this chapter)

3.3.3.1.5 Additional interior landscaping **should** comprise a minimum of 10% of the total parking area exclusive of the perimeter planting strip used for screening purposes.

3.3.3.1.6 Each planted area **shall** not be less than 25 square feet and drought-tolerant plants **should** be used to reduce watering needs.

3.3.3.1.7 Parking bays **shall** be terminated by a landscaped parking island rather than painted asphalt. Parking islands **shall** be landscaped and trees, shrubs and groundcovers **shall** be well-maintained to avoid patches of bare ground.

3.3.3.1.8 Landscaping **shall** be protected by wheel stops or a 6-inch curb. Groundcovers **shall** be used where car fenders or swinging doors are expected. Trees and shrubs **shall** be planted away from these areas for their protection.

3.3.3.1.9 Landscaped parking islands **may** be the appropriate location for required storm drainage swales that facilitate natural infiltration. In such cases, landscaped area **should** be no less than 10 feet wide with the sides having a slope no greater than 1:4. Drain inlets **shall** be placed accordingly within these swales and elsewhere in the parking area to eliminate pooling.

3.3.3.2 Screening Buffers

Parking lot screening is required to mitigate the effects of parking on the surrounding environment, particularly where lots abut pedestrian spaces and sensitive uses such as residential homes.

3.3.3.2.1 Sidewalk Buffers

3.3.3.2.1.1 Parking lots abutting pedestrian-oriented streets **shall** be effectively screened to reduce the sense of auto-dependency and encourage the sense of "pedestrian equivalence."

3.3.3.2.1.2 The landscape buffer between a sidewalk and a parking lot **should** be at least 6 feet in depth. At a minimum, the buffer **should** contain trees and shrubs that create a visual separation.

3.3.3.2.1.3 A hedge, wall, and/or trellis **should** be provided as a buffer to enhance the visual and physical separation between the sidewalk and parking lots.

Figure 3.3.3.2.1.3.a: *A trellis softens the visual impact of surface parking.*

Figure 3.3.3.2.1.3.b*: A pedestrian path through a parking lot.*

3.3.3.2.1.4 Buffer elements **shall** be of sufficient height to buffer pedestrians from car headlights.

3.3.3.2.1.5 Walls **shall** be articulated or adorned with architectural detail to provide interest at street level. Walls and trellises **may** also be used to continue the building wall and provide a greater sense of enclosure along the street.

3.3.3.2.1.6 Walls **shall** be visually permeable above 4 feet of height. Permeable elements **may** be designed beyond the 6-foot maximum for walls and fences.

3.3.3.2.2 Perimeter Planting

3.3.3.2.2.1 Buffers **shall** be landscaped and protected from car fenders with wheel stops or a 6-inch curb. Drought tolerant ground covers **shall** be planted under fender overhangs.

3.3.3.2.2.2 A wall or fence **shall** separate uses that are incompatible such as where commercial uses abut residential homes. Walls and fences **shall** take on the character to the residential use rather than the commercial use.

3.4 Natural Features

3.4.1 Site planning and landscape design **should** take advantage of natural features such as elevation changes, arroyos and other drainages, trees, rock outcroppings, etc. to create interest in the landscape.

Figure 3.4.1: *Natural features such as elevation changes can create opportunities for a dynamic streetscape.*

3.5 Fences and Walls

3.5.1 Unless otherwise noted within these Standards and Guidelines and/or within the Overlay Ordinance, walls and fences used for screening purposes within the TOD District are not to exceed 6 feet in height. Trellises, arbors, and semi open structures are acceptable substitutions for solid walls if landscaping is used to enhance the visual buffer.

3.5.2 Walls and fences buffering residential uses from non-residential uses **shall** take on the character of the residential use.

3.5.3 Chain link fencing **shall** not be used unless they are completely screened from view by a hedge or other landscaping.

3.5.4 All walls **shall** demonstrate a high level of architectural detail, articulation, and design, and be constructed of durable materials.

3.5.5 Walls and fences **should** be accompanied by a combination of trees, shrubs, groundcovers, and climbing vines to soften their appearance.

3.5.6 If a wall is used vines or other landscaping **should** be used to soften the appearance of the wall from the street.

3.6 Landmarks

Landmarks can be important for creating an identity for a TOD District or neighborhood.

3.6.1 Landmarks can be created by special landscape or street design features that create gateways or centers within the TOD.

3.6.2 Civic buildings, including the transit station, **should** receive special design attention so that they serve as landmarks within the community.

3.6.3 Parks, plazas, and other open space features can serve as both landmarks and places for social interaction.

4. Building Design

Although the site design and the style of buildings should reflect the context of the area, in general, buildings should adhere to the following guidelines. Many building design standards are also defined in the main body of the ordinance. The issues discussed below relate to urban design and architectural qualities and character of buildings within a TOD.

4.1 General Requirements

4.1.1 The more active uses within a building **should** be located at the street frontage and at street level allowing these uses to help activate the street.

4.1.2 The design of building massing and detail **shall** reflect and make visible the use and activity within the building.

4.1.3 Perceived block distances **should** be reduced with continuous and well-articulated building facades.

4.1.3.1 All exterior walls of a building **shall** be articulated with a consistent style and materials. In no case **shall** any façade consist of unarticulated blank walls.

4.1.3.2 Break large structures with offsets, detailing, and/or changing façade designs.

Figure 4.1.3.2: *Three separate retail establishments can create their own identity within one building.*

4.1.4 Windows **shall** allow for visual connections between exterior and interior activity to create attractive activity along street. Transparency along the street also allows interior shop lights to illuminate and activate the street in the evening.

Figure 4.1.4: *Windows attract passing pedestrians by allowing them to view into shops.*

4.1.5 Building facades **shall** have design elements that are human-scaled in order to support the creation of a pedestrian-friendly environment. This is particularly important on the ground floor of commercial buildings where pedestrians have the most direct relationship to buildings.

4.1.6 Human-scale design incorporates architectural elements that have a relationship to human proportions; that is, they are closely proportioned in size to human height, an arms reach, or the grasp of a hand. Form, articulation, massing, height, detail, texture, change in color, and pattern can all be used to address human scale. (See also *Section 7. Lighting* in this chapter for a discussion on human scale and pedestrian vs. driver perception.)

4.1.6.1 Building massing **shall** be broken down to human proportions. Changes in plane, height, fenestration, roofs, etc. create intricacies that reduce the mass of a building. Relentless unarticulated facades are uninteresting to the human eye and are not conducive to attracting pedestrians to a place. Effective elements include: building bays, towers, roof eaves, window proportions, arcades, awnings, verandahs, porches, and stoops.

Figure 4.1.6.1.a: *An articulated façade makes for a more interesting pedestrian environment.*

Figure 4.1.6.1.b: *Human-scaled architectural details and materials create complexity on a simple pilaster.*

4.1.6.2 Human-scale materials are visually complex and tactile. People need to be able to touch, grasp, and understand the scale of the architecture. Appropriate details and materials include: tile wainscoting, window and door trim, column supports for overhangs and arcades, etc.

4.1.6.3 Architectural design and detailing **should** consist of durable materials that are human-scale in proportion. Ornamentation or details that are integral to the structure can be incorporated to create interest. However, architectural detailing **shall** not consist solely of color changes without changes in material or planes as they create a "tacked-on" look.

Figure 4.1.6.3: *Building details draw the eyes of passers by, attracting them to the space.*

4.1.7 Buildings **shall** take into account the urban environment and **should** not stand out as landmarks if they are part of the overall fabric. Rather, landmarks **should** be reserved for significant buildings such as the transit station or other community buildings. (See also *Section 3.6. Landmarks* in this chapter.)

4.1.8 Buildings **shall** not be reduced to conveying building massing as a primary architectural gesture. Simplifying buildings to this extent creates monotony and over simplicity of detail which is not conducive to creating an interesting pedestrian environment.

4.1.9 Arcades and recessed building entries **should** provide shade and enclosure that create comfortable human-scaled environments for pedestrians.

4.1.10 To give buildings an authentic appearance, as opposed to a veneer-like quality, material changes **shall** not occur at external corners. Rather, they **shall** occur at interior corners or at a change in horizontal plane.

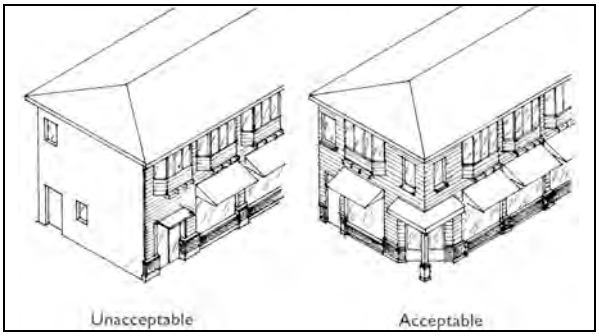


Figure 4.1.10: *Façade materials should not create a veneered look.*

4.1.11 Materials selected **should** create an architectural character in keeping with the regional architectural traditions and convey a sense of durability, as well as relate to the architectural character of existing adjacent neighborhoods and buildings.

4.1.12 The amount of reflective building materials **should** be limited or prohibited on development directly abutting a pedestrian way. Highly reflective material on building facades may help to keep interior temperatures down but can be extremely uncomfortable for the pedestrian passing by.

4.1.13 Primary entries **shall** be clearly expressed and recessed or framed by sheltering elements such as awnings, arcades, porches, or porticos. Secondary entries **should** be treated in a similar, but lesser manner.

4.2 Commercial Buildings

4.2.1 Front facades **shall** be built parallel to the street.

4.2.2 Where commercial buildings meet residential uses, building height impacts on privacy and solar access **should** be mitigated by stepping down in height to meet adjacent residential buildings.

4.2.3 Facades near residential uses **should** restrict views from within the structure into nearby yards and homes.

4.2.4 Special architectural features, such as bay windows, decorative roofs, and entry features **should** avoid projecting onto front setbacks and rights-of-way such that they dominate the sidewalk and/or intrude into the clear space defined by the ordinance.

4.2.5 Prominent features, such as towers, **should** be placed at street corners and/or highlight main entrances.

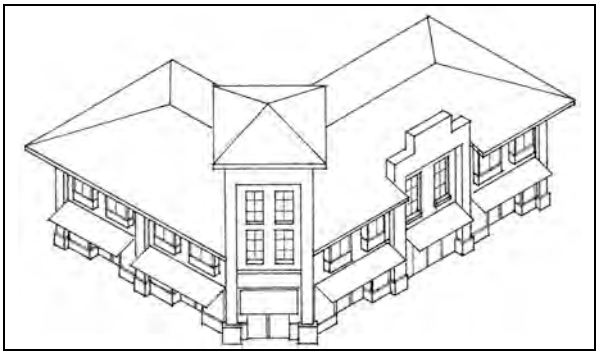


Figure 4.2.5: *Corner towers and prominent entry features clearly define main entrances, while awnings call out small shop entrances.*

4.2.6 Major features such as stair, elevators, and major entrances **shall** be expressed with vertical elements to avoid an overly horizontal look.

4.2.7 Structures with internal parking **shall** not reflect parking ramps with sloping façade elements.

4.2.8 The primary entry(s) for commercial establishments and the entrances to the second floor uses **should** be within the primary façade and **should** be accessible directly from a public street, park, or plaza.

4.2.9 Articulation **should** provide interest and shade, and reduce the feeling of "exposure" for the pedestrian.

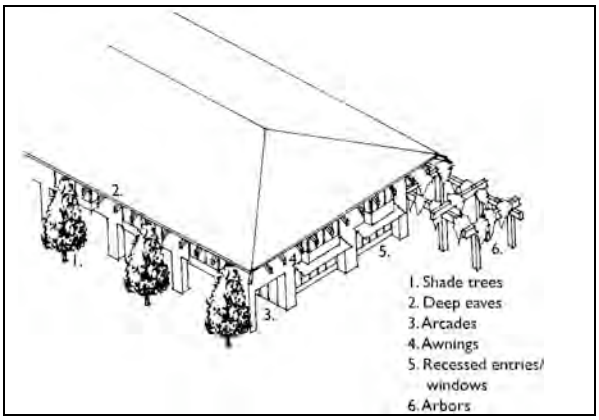


Figure 4.2.9: *Non-mechanical climate control devices create attractive pedestrian environments and break down building mass.*

4.2.10 Commercial bays of approximately 20 to 36 feet **shall** be visually expressed to break down the scale of frontages into smaller increments.

4.2.11 Development directly abutting the street **should** provide additional shading with methods such as awnings and arcades.

4.2.12 A building's first floor **may** be recessed from the front setback for the purposes of an arcade provided the arcade has a minimum height of 9 feet and a minimum width of 8 feet. Additionally, an entry door area up to nine feet wide **may** be recessed up to 4 feet back from a setback or build-to line.

4.2.13 Awnings **shall** be no wider than a single storefront or architectural bay, whichever is narrower. Colors **shall** be consistent with the overall palette of the development.

4.2.14 Awnings **shall** not include internal lighting.

4.2.15 Permanent, well-constructed and articulated awnings **should** be used.

4.2.16 Simple roof designs that are not overly articulated **shall** be used.

4.2.17 Mechanical equipment **should** be screened from public view to minimize clutter. Rooftop mechanical equipment **should** be screened from view within the overall form of the roof or behind a parapet.

4.2.18 Parking structures **shall** adhere to requirements as outlined in this section.

Figure 4.2.18: *This parking structure is accessed from a side drive allowing commercial establishments to front the street and activate the sidewalk.*

4.3 Residential Buildings

4.3.1 Street frontages **should** be addressed by the more active rooms within a residence and avoid lining the street with garages and excessive driveways.

Figure 4.3.1: *Prominent garages create an environment that is devoid of life, both in the private and the public environment.*

4.3.2 Where multi-family residential units are set back less than 5 feet from a public right-of-way, first-floor units of multi-family residential buildings **shall** be designed with additional measures to ensure privacy. At a minimum, window sill heights **should** be raised above the eye level of a passing pedestrian. Elevated stoops and raising interior floor elevations above adjacent sidewalk grade are some measures that can be employed.

Figure 4.3.2: *Front stoops and stairs raise the living area well above the street creating privacy for residents. Although garages front onto the sidewalk, they do not dominate and are well detailed.*

4.3.3 Multi-family residential buildings **may** also be developed as mixed-use buildings with commercial or other active uses at street level frontage to activate the street.

4.3.4 Main entrances **shall** front directly onto the street, taking into consideration the required setback as outlined within the Ordinance.

4.3.5 Buildings **shall** be built such that the front facades are parallel to the street.

4.3.6 Frontage onto streets **shall** include a readable series of zones transitioning from public to private, rather than an abrupt separation which occurs when a garage constitutes the majority of a building's street front.

4.3.7 Building fronts **should** contain public/semi private transitions such as stoops and open porches to create a friendlier streetscape where pedestrians can interact easily with their neighbors.

Figure 4.3.7: *Front porches and permeable fencing create an inviting, yet clear transition between the public and private realms.*

4.3.8 To allow for their use, porches **shall** have a minimum clear depth of 8 feet.

4.3.9 For courtyard configurations, it **may** be appropriate for a wall to abut the sidewalk. (See *Section 3.5 Fences and Walls* in this chapter.)

5. Park and Plaza

Parks and plazas are an important element of public space within all communities. They are the gathering places that allow for leisure and recreational activities as part of public life. They are an important amenity and provide opportunities to meet friends and co-workers. There are particular conditions for parks and plazas in Transit-Oriented Development that relate to the size of the space and the amenities within it.

5.1 General Requirements

5.1.1 Public gathering spaces **shall** be centrally located at major hubs (e.g. near transit station) and other major activity nodes within the TOD.

5.1.2 Smaller parks, or pocket parks, **may** be scattered around TOD neighborhoods to create additional opportunities for recreation.

5.1.3 To keep them at a pedestrian-scale parks and plazas **should** not have an area greater than 0.25 to 1.0 acres within the core area of a TOD, within 500 feet of the transit stop. Outside of that area parks **should** not exceed 5 acres in area. Larger-scale parks may be located outside of the TOD.

5.1.4 Parks and plazas **shall** not be an afterthought in the design process. Public gathering spaces **shall** be integral to the design process as they **should** become the main focus around which civic life revolves.

5.1.5 Parks and plazas **shall** be fronted by public streets, pedestrian accessways, and/or active building frontages and entries. Surface parking **shall** not front directly onto a public park or plaza.

Figure 5.1.5: *Public space at Arizona Center, Phoenix.*

5.2 Circulation

Circulation within public spaces should generally allow users to access destinations in a fairly direct manner in addition to giving them the choice to stroll in a roundabout way. This will eliminate cut-throughs that destroy landscape features while allowing flexibility in how persons use the space.

5.2.1 Parks and plazas **should** be designed to provide easy access to activities within and adjacent to them.

5.2.2 Circulation within parks and plazas **shall** support direct connections into the park from the surrounding neighborhoods, commercial areas, and near-by semi-private courtyards.

5.2.3 Paths within parks and plazas **should** also anticipate “desire lines” (shortcuts that would be taken across the park).

5.2.4 In no case **shall** a fence prohibit access into the park, although fences **may** be installed around children’s play areas for security and control.

5.2.5 Paths within parks and plazas **shall** not be a replacement for perimeter sidewalks along adjacent streets and building frontages.

5.3 Activities and Amenities

Public open spaces should encourage round-the-clock activity, particularly around the transit station. Parks and plazas should not close after hours. Rather, users should be encouraged to use them as a 'living room' where they can chat, meet friends, hang out, or stroll at all hours of the day.

5.3.1 Activities

5.3.1.1 Activities **should** be encouraged, even programmed, within parks and plazas during the day and evening hours to create a lively community focus.

Figure 5.3.1.1: *Activities bring people to a space and attract others in the process.*

5.3.1.2 Shops which are active during the evening hours **should** be encouraged to front directly onto the park or plaza, or its perimeter streets. Activity can be encouraged by allowing private cafes to place tables along the perimeter and allowing vendor carts to do business within the space.

5.3.1.3 Activities **should** be visible from the surrounding area to improve security. Example uses for enlivening parks and plazas, include: chessboards, stages and amphitheaters, vendor carts, children's play areas, and fountains.

5.3.1.4 Activities **should** be encouraged to spill out onto adjacent sidewalks.

5.3.2 Amenities

5.3.2.1 Public parks and plazas **shall** provide the user with a year-round choice as to seating preferences by providing a balance of shady and sun-exposed areas. Some areas **may** be protected by gazebos or other overhead structures to protect users from sun and seasonal rains.

5.3.2.2 The configuration of seating **should** allow two people or a group to face each other for conversational purposes.

5.3.2.3 Seating **should** be arranged to allow the user maximum choice depending on the desired level of privacy and visibility, sun/shade, and proximity to activity (such as sports fields).

Figure 5.3.2.3: *A pleasant park – Arizona Center, Phoenix.*

5.3.2.4 The amount of seating provided **should** consider the activity generated by uses in the park and the intensity of surrounding activities.

5.3.2.5 Site features (e.g. seating, stairs, ramps, amphitheaters) may be integrated into the design of plazas and parks.

5.3.2.6 Water features **may** create spaces that attract people a place and create a cooling effect on the surrounding space.

Figure 5.3.2.6*: A water fountain provides a cool place for rest and relaxation.*

5.3.2.7 Garden structures such as trellises and arbors **should** be used to provide attractive dappled shade for pedestrian areas.

5.4 Landscaping

5.4.1 At least 25% of a plaza **shall** be composed of planted landscape areas (planters, planting beds, etc.). At least 50% of the entire open space **shall** have a tree canopy after ten years of installation. This helps to make a comfortable gathering place and a relaxing environment.

5.4.2 Special paving materials and detailing **should** be used, particularly for plazas where large surface areas require detail.

5.4.3 Natural features **should** be restored and/or integrated as amenities to enhance the uniqueness of the particular TOD.

5.4.4 All mechanical equipment and meters **shall** be located to minimize visual impacts from streets, sidewalks and other public spaces.

6. General Landscape Regulations

6.1 Vegetation planted **should** reflect the regional identity of the Valley and follow xeriscape principles, meaning that native, drought-tolerant species **should** be used.

6.1 Drought-tolerant trees, shrubs, perennials, and groundcovers cited in the Arizona Department of Water Resources Low-water Plant List **should** be utilized as part of the drought-tolerant palette.

7. Lighting

Lighting is an essential amenity along streets, accessways, pathways, parking lots, plazas, and parks. They create a safe environment which is conducive to lively nighttime activity. Lights can also create interest by illuminating special architectural or landscape features, special places, and convey a feeling of activity during the evening. Lighting standards within the TOD should be pedestrian-friendly.

7.1 General Requirements

Pedestrians have a smaller field of focus, when compared with people in a moving vehicle, since they move at a slower pace, look at more detail, and stop frequently for long periods of time. Thus they require shorter light standards to direct more intense light onto a smaller space. As in buildings, they also require more detail in the landscape. Drivers, on the other hand, move at a faster pace, and thus only scan the immediate vicinity. Lights must therefore, illuminate the greater environment. Also, as drivers move about at high speeds, they also notice less detail in design, thus they can tolerate less detail in the landscape.

7.1.1 Adequate and aesthetically pleasing lighting **should** be provided for safety, security, and a greater sense of comfort for pedestrians.

7.1.2 Lighting levels **should** be at least 2-foot candles. It is preferable for fixtures to be spaced close together with lower light levels than further apart with intense and varied light levels which can be uncomfortable for pedestrians.

7.1.3 Lamps **should** provide "natural" and whiter light, such as that provided by metal halide lamps as opposed to high-pressure sodium, because it increases comfort and safety.

7.1.4 Low-pressure sodium lights **shall** not be used as they create an unnatural yellow cast which reduces safety and the quality of the environment.

7.1.5 Glare **should** be minimized and lights **should** be directed away from eye level both standing and sitting.

7.2 Street Lighting

7.2.1 Pedestrian-scaled lighting **shall** be provided to vertically define the sidewalk and other pedestrian spaces and to enhance night time safety.

7.2.2 Lights **should** be spaced approximately 30 feet to 40 feet on-center. This range will keep lights at a perceptible distance for pedestrians without crowding the street.

7.2.3 The spacing of lighting fixtures **shall** be coordinated with tree plantings and **should** not cause the spacing of trees to not satisfy the landscaping standards and guidelines.

7.2.4 Pedestrian scale lights **should** be lower than typical auto-oriented light standards. Heights **should** be approximately 12 feet to 20 feet in height at a maximum.

Figure7.2.4: *Pedestrian-scale lighting at Biltmore Fashion Park*

7.2.5 "Cobra Head" lighting, and other designs that cater to the automobile, **should** be avoided. Such designs are typically mounted on taller poles to illuminate a larger area and are lacking in detailing that is critical to creating an interesting pedestrian realm.

7.2.6 Light standards **may** also be combined on one post. Low, pedestrian-oriented lights can be affixed to a post and direct light onto sidewalks, while the same post **may** also accommodate auto-oriented lights directed at roadways.

7.3 Landscape and Architectural Lighting

Lighting can enhance landscape and architectural details during the evenings and add to the sense of activity on streets. Reflective lighting, architectural lighting, down-lighting, and up-lighting can enhance the pedestrian realm by highlighting architecture, signage, and special places in the landscape, as well as create a greater sense of safety.

7.3.1 Lighting **shall** accentuate the architecture and landscaping within the TOD.

7.3.2 Buildings **shall** be illuminated by lighting that accentuates architectural features and rhythms.

7.3.3 Spill over lighting into residential areas **should** be avoided in order to minimize nuisances.

7.3.4 Bollards with built-in lighting **may** be used to demarcate special places.

7.3.5 Parking lot lights **may** be taller than street lamps, but **shall** not exceed a height of 20 feet.

7.3.6 Parking lot lights **shall** minimize glare into adjacent uses, particularly residential areas.

8. Signage

Much like the character of its buildings, signage should reflect the character of a place. Plastic, internally illuminated signs containing large and simple lettering are typically associated with mini-malls and drive-thrus, which convey a preference for auto-orientation, particularly if they are allowed to dominate the landscape. On the other hand, finely crafted signage with ample detailing and smaller character type conveys that shops wish to attract the pedestrian.

8.1 Sings **should** be integrated within the project's architecture.

8.2 Signage placement **shall** be limited to awnings, arcades, display window fascias, and/or suspended placards. Internally illuminated signs (other than neon) and back-lit awnings **shall** not be permitted.

Figure 8.2: *Highly detailed signs containing small-scale type styles cater to the pedestrian*

8.3 Signage dimensions **shall** be kept at a pedestrian scale and demonstrate a high level of detailing and craftsmanship. Pole-mounted signs **shall** not exceed a height of 12 feet.

8.4 Externally illuminated signs **should** be used as lights tend to illuminate signs and not pedestrians, minimizing glare. Internally illuminated signs, with the exception of neon, **should** be avoided as they are typically designed to attract drivers and are too intense for pedestrians.

8.5 Sale signs and other temporary signs **shall** not dominate a site.

8.6 No signage **should** be allowed above the eave of the roofs as is typical of many auto-oriented settings, which require larger signs to attract the attention of moving traffic.

8.7 Flexibility **should** be granted to artisans and craftspeople who may wish to create unique signage that may contribute to the sense of place.

9. Public Art and Features

Public art can be an important element for humanizing public space, providing visual interest and a human-scale to the environment. It also helps to define the uniqueness of a place that will set it apart from others. On a large scale, public art has the ability to unify a district with a theme and educate users. At a pedestrian-scale it can provide visual interest for the passer-by and infuse a place with a sense of playfulness.

9.1 Public art **should** not be a replacement for good urban design. A mural can mitigate the effects of a blank façade along a sidewalk, however initial attempts **should** be taken to minimize the presence of a blank façade or other detrimental design features.

9.2 Public art **may** be used to create neighborhood identity. Efforts **should** be made to reflect the character and history of the community.

9.3 Public art **may** be incorporated into site and building design. Art can be cleverly incorporated into otherwise mundane street elements such as light poles, benches, trash cans, paving, etc.

Figure 9.3: *Examples of public art incorporated into the street*

9.4 Water can be incorporated into public art installations or be simple fountains onto their own. In a climate such as the Valley Region's, the sound and sight of water can provide a pleasant and cool respite for the pedestrians.

9.5 Water elements **should** support conservation efforts by circulating water and using non-potable water.

10. Vacant Lots and Buildings

Given that TODs will be areas "in transition" for several years as they are developed, it is important to require a level of maintenance and care even for vacant lots within the TOD.

10.1 Vacant lots **shall** be kept clear of debris and maintain an attractive and functional fence.

10.2 Physical maintenance of buildings has an impact on the pedestrian. The repair and cleanliness of buildings demonstrates whether a neighborhood is being cared for and if it is safe to be there. Vacant buildings **shall** be maintained to the level of occupied buildings.

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